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G. Holmes, FCA – Editor of *Accountancy*, Associate Editor of *Accounting and Business Research*.

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Editorial

With this issue *Accounting and Business Research* begins its sixth year. It does so under a new Editor: Professor Robert H. Parker, Professor of Accountancy, University of Dundee.

Walter Taplin, MA, BCom, having turned into a reality the dream shared by Bertram Nelson and Sir Ronald Leach and many others on the Institute's Council that the Institute should have its own research journal, retired on 30 September 1975. Having edited *Accountancy* for ten years from 1961 to 1971 and *Accounting and Business Research* part-time in his semi-retirement since that time, Walter Taplin has played a key role in Institute communications. He leaves the sometimes esoteric world of *Accounting and Business Research* for the more earthy world of his garden in Crockham Hill and problems of water supply in Dorset. But even in this next phase of semi-retirement, he retains his interest in the world of journalism, and in writing about his other great love, the ancient highways and by-ways of Britain.

Bob Parker needs no introduction to readers of *Accounting and Business Research*, many of whom will have met him at conferences on accounting; and those who have not are likely to be familiar with his writings. He brings to the journal new contacts, and his own especial interests. We are likely to see more on Europe and upon international accounting problems generally; but the basic aim of *Accounting and Business Research* remains the same: that of bridging the gap which unfortunately, but almost inevitably, exists between the practising and industrial accountant on the one hand and his academic colleague on the other.

It is a sad fact that, while *Accounting and Business Research* has many non-academic readers, comparatively few of them have so far put pen to paper. This is, therefore, an appropriate point in time to remind readers that contributions from all sources are welcome, and that if *Accounting and Business Research* is to be a bridge, those in practice and industry must play their part.

Geoffrey Holmes

Accounting Information: An Investigation of Private Shareholder Understanding

T. A. Lee and D. P. Tweedie

Introduction

It has been suggested that accounting is a communications system, concerned with communicating measured data for the benefit of a variety of decision makers. Indeed, Jordan (1)* has described the general aim of accounting totally in terms of the need to communicate:

'The purpose of accounting is to communicate economic messages on the results of business decisions and events, insofar as they can be expressed in terms of quantifiable financial data, in such a way as to achieve maximum understanding by the user and correspondence of the message with economic reality'.

In other words, the utility and relevance to the user of reported accounting information lies not simply in how well it describes the economic activity of the enterprise but also in how clearly it presents its economic message to the user. Recent writings concerned with the objectives of financial statements have shown a realization of the importance of this latter concept of user comprehension. For example:

'An important consideration is that financial statements be understandable to those who may use them. The assertion is frequently made that business enterprises are enormously complex, that to provide financial information about them is therefore difficult, that financial reporting cannot be expected to be uncomplicated and that the statement user should be expected to need sophisticated advice. Yet, the essential function of accounting is to provide understandable financial information about complex business activity to a wide variety of users. Hence, to respond to criticisms of financial statements by citing, in defence, the complexities of business is really an attempt to excuse the accounting profession for a failure to meet its responsibilities'. (2)

And more recently:

'Accounting information should be presented so

that it can be understood by reasonably well-informed, as well as by sophisticated, users Increasing understandability of financial information is not a mere matter of simplifying. Not all complexities can be made simple by describing them simply. Understandability requires that information be expressed as simply as permitted by the nature and circumstances of what is being communicated'. (3)

Both views above acknowledge the complexity of business activity and of the accounting information which describes it, and yet also describe the need to make financial statements comprehensible to a variety of users. This latter point is often ignored in the relevant literature. While a great deal of attention has been paid to the description of economic activity by examining problems of measuring accounting data (for example, income determination and asset valuation), accountants have devoted little time to the problems associated with maximising user understanding of reported accounting information. A review of the relevant literature reveals an almost complete lack of writings and research on the nature and degree of understanding of financial report users. This is despite studies which have revealed that reported data are extremely complex and require high levels of knowledge, experience and intelligence to comprehend them (4).

For example, Smith and Smith, in a study of financial reports for the year 1969, concluded that, because of the complexity of the terminology used, only 19.3% of the U.S. adult population was capable of reading and understanding the notes in most of the financial statements tested (5).

Objectives of study

The general aim of this paper is to fill a gap in previous research into the problems of financial report usage – that is, by discussing preliminary findings about the nature and extent of user understanding of company financial reports. In particular, the paper tests two related hypotheses about which

*Figures in brackets refer to works cited at the end of this article, on page 13.

little factual evidence is available, and on which depends the accountant's ability to communicate to shareholders. These are:

- (a) A majority of private (as distinct from institutional¹) shareholders are ignorant of the nature, meaning and implications of financial reporting practice.
- (b) If such ignorance exists, education and/or experience in accounting matters helps to alleviate it.

These hypotheses lie at the heart of any scheme intending to improve user comprehension of financial statements. If private shareholders do understand company financial reports then the reporting accountant and the board of directors are succeeding in their important role of communicating much-needed information to investors. If, however, it becomes clear that such shareholders do not understand reporting practices then, clearly, the report producers must seek to improve communication between themselves and the report consumers.

The second hypothesis attempts to give a guide as to how this could be done. If the hypothesis is proved to be correct then the answer to increasing user understanding would appear to lie in some form of education for the less well-informed recipient of financial reports. If, on the other hand, those users with a knowledge of accounting reveal a low level of comprehension which is no greater than that of other users, then it is possible that the entire basis of financial reporting may have to be reconsidered if companies are to communicate successfully with their shareholders.

The research project

The most familiar financial reports are those annually produced by companies and their most obvious users are company shareholders, although it must be fully admitted that there are other types of report (for example, interim income statements) and other significant groups of potential users (for example, lenders and creditors). With this in mind, it was decided to initiate a large-scale investigation into whether shareholders use company annual financial reports; how they use them; and whether they reasonably understand their content. This investigation is now in progress (financed by The Institute of Chartered Accountants in England and Wales) but, as a necessary foundation to it, it was decided to

conduct a preliminary investigation on a smaller scale. This paper reports on the results derived from this initial survey and, particularly, reports on data relating to shareholder understanding of reported information. The analysis related to shareholder usage of accounting information is reported elsewhere (6).

For purposes of conducting the survey of shareholder understanding, a small public company was identified with the help of its auditors. At that time, the company had 1,974 ordinary shareholdings, representing 11,393,667 ordinary share units. Having decided at this stage to look at a relatively neglected group of investors – private shareholders – a simple postal questionnaire was designed and sent to identifiable individual shareholders. This meant excluding from the survey population the following groupings: institutional shareholders, industrial and commercial shareholders, and nominee companies. Overseas and nominee shareholdings were also excluded on time and cost grounds. In addition, it was found in certain instances that more than one shareholder resided at the same address (for example, husband and wife, parent and child, and so on). In order to minimise the possibility of collusion in answering questionnaires, it was decided to send a questionnaire only to the first-named at each such address. Those surveyed were invited to answer the questionnaire personally rather than to seek advice or help.

After eliminating the above-mentioned shareholders from the survey population, the total number of persons sent a questionnaire was 1,594. The total response was 374, giving a 23.5% return. This could be divided into the following groupings for purposes of analysis (see Table 1).

From the above data, it can be seen that the respondent group was predominantly male, largely over 50 years of age, usually with little or no accounting or financial management experience, and normally either retired or in occupations not directly concerned with accounting, investment or financial management. Certainly, it would be wrong to suggest from this small sample that this is typical of all private shareholder populations. However, it does appear to conform with what might be expected from such an analysis – investment being largely left to the male members of households; and many private investors being largely unversed in accounting matters.

Two of the variables in Table 1 (training and experience in accounting and finance; and occupation) have been used to test the hypothesis that education or exposure to accounting matters helps to increase understanding of the reporting process. Both variables have been used as it was felt that many of the

¹Because of the special characteristics of the institutional investor, it is felt that the problems of financial report usage from his standpoint are somewhat different from those of the private investor. The institutional investor's use of company financial reports will therefore be examined in a later study.

respondents who had retired from active employment could have been involved with accounting in their working lives and, consequently, an analysis by occupation alone would not have been satisfactory. The occupation variable is, however, important in itself as a check on the training and experience variable – that is, it could be expected that respondents employed in accounting, investment or financial management would reveal similar levels of understanding of reporting practices to those with a significant degree of accounting experience and knowledge.

TABLE 1
Analysis of respondents

Total number of respondents of which the following were:	374
	%
Male	80.5
Female	16.8
Sex not disclosed	2.7
	100.0
Aged 50 or under	29.2
Aged between 51 and 64	36.8
Aged 65 or more	31.6
Age not disclosed	2.4
	100.0
With significant accounting or financial managerial experience and knowledge	25.7
With a small amount of accounting or financial managerial experience and knowledge	21.1
With no accounting or financial managerial experience or knowledge	50.3
Accounting or financial managerial experience not disclosed	2.9
	100.0
Retired	28.3
In accountancy, investment or financial management	21.7
In sundry other professional and managerial occupations	44.9
Occupation not disclosed	5.1
	100.0

General indications of understanding

As a prelude to more detailed questions on comprehension, the survey respondents were asked to indicate whether or not they felt they understood the accounting information contained in company annual financial reports and, if they answered in the affirmative, whether or not they found it relevant to their investment decision making activities. Table 2 analyses the responses to this question:

TABLE 2

Understanding and relevance

Total number of respondents	374	
		%
Respondents indicating that they understood the reported information:		
and found it relevant to their investment decisions	39.8	
and found it irrelevant to their decisions	28.1	
		67.9
Respondents indicating that they did not understand the reported information	24.6	
Respondents giving other answers	2.7	
Respondents giving no answer to question	4.8	
		100.0

These figures reveal that about 68% of respondents believed that they understood the information contained in annual reports, of which approximately 59% also believed it to be relevant to their investment decisions. Given the fact that these were private shareholders who are often regarded as the less sophisticated of all report user groups, it could perhaps be surprising to some to find that only one-quarter of respondents state that they do not understand the information. However, given the widely acknowledged and much discussed faults of the present system of financial reporting (7), it is not surprising to find that 28% of respondents state that, despite understanding the information, they felt it to be irrelevant to investment decision making. It appears, therefore, that the level of understanding of reported information amongst private shareholders in this survey may be somewhat higher than many readers may have expected. However, it should be remembered that only four out of every ten felt they both understood it and found it relevant. The small number of miscellaneous answers generally indicated only partial understanding of the information.

Which of the respondents felt that they did not understand reported accounting information? Considering, first, the question of experience, it can be seen from Table A of the appendix² that only 6.3% of those with significant experience stated they did not understand reported information. The corresponding figures were 20.3% for those with some experience and 35.2% for those with none.

The level of experience attained by respondents also appears to have a bearing on the degree of relevance of reported information to investment

²Full details of the analysis of the data presented in this paper are given in Tables A to F, inclusive, of the Appendix.

decisions – the greater the experience, the more relevant the information is believed to be. For example, 60.4% of respondents with significant experience believed it to be relevant, compared with 40.6% of those with little experience and only 29.8% of those with none. (Significant at the 1% level).³

As mentioned earlier, a further way of relating understanding and experience was to compare the basic data with the occupations of the respondents. The resultant analysis is found in Table A. The results of the analysis tend to confirm those mentioned above in that more of the respondents employed in relevant occupations (such as accountancy, investment and financial management) believed that they understood reported information than did those in other occupations. Only 11.1% of those with relevant occupations stated they did not understand the information compared with 20.8% of retired persons and 33.4% of those in a variety of other occupations.⁴ It is interesting to note that a large proportion of those with a professional knowledge of accounting, and who could therefore be expected to be aware of the limitations of reported data, stated a belief in its irrelevance. The latter opinions were most strongly held by persons actively using reported information in their day-to-day activities in the investment and finance fields.

While the above results reveal the respondents' own perceptions of their understanding of reported information and its relevance to their investment decisions, they are of course not necessarily a true picture of their understanding of reported data. Consequently, in an attempt to assess the shareholders' basic comprehension of the reporting process, they were asked four further questions which sought broadly to determine their level of understanding of accounting valuation principles; the responsibility for reported information; the general nature of accounting data; and reporting objectives.

³It should be noted that for purposes of conducting chi-square tests of significance, it was felt appropriate only to look at the values for disclosed characteristics – that is, to ignore undisclosed characteristic data which are not relevant to comparisons of disclosed experience and occupation characteristics. In addition, to have included the undisclosed characteristic cells in the chi-square calculations would, because of the smallness of the observed values, have tended to inflate the chi-square statistics, possibly causing the null hypothesis to be rejected in situations where it should not be.

⁴The chi-square test for the analysis of stated understanding of reported information against occupation revealed differences significant at the 1% level.

Understanding of valuation principles

The first of these questions tested the respondents' knowledge of the traditional valuation of fixed assets. In this respect, the examination was a limited one, being confined to finding out the basis on which respondents believed plant and machinery to be normally valued for reporting purposes – that is, at its original purchase cost, original purchase cost less an allowance for usage, current second-hand selling value, current cost of replacing it, or any other basis. Admittedly, due to the simplicity of the questions asked, it would be wrong to generalise about the level of investors' understanding of accounting values. However, the subsequent data and related comments reveal some interesting evidence which deserves to be researched further. Table 3 tabulates the overall results, with Table B in the appendix giving the detailed cross-analysis.

TABLE 3

Understanding of valuation principles

Total number of respondents	374
	%
Respondents indicating plant and machinery is normally reported at	
its original cost	2.1
its original cost less an allowance for usage	47.9
its current second-hand selling value	12.9
its current replacement cost	14.0
Respondents giving other answers	0.8
Respondents stating they did not know what valuation principle was used	7.7
Respondents giving multiple answers	8.0
Respondents giving no answer	6.6
	100.0

Clearly, almost one out of every two respondents understood plant to be reported at original cost minus an aggregation of depreciation. (The term 'depreciation' was not used in order to avoid technical accounting terms which might be confusing to some respondents). In addition, most of the 30 respondents giving multiple answers included this category in their answers. However, it is disturbing to find approximately 27% of respondents indicating their belief that plant is reported in some form of current value terms. This tends to support the popular statement, so often repeated in the asset valuation debate in the accountancy literature, that the use of historic cost accounting for balance sheet purposes could cause the less sophisticated user to believe that the asset data reflected current values rather than unallocated past costs. In some ways, therefore, it

is encouraging to find only approximately one in four of this private shareholder group held these mis-conceived ideas.

Nevertheless, it should be noted that 7.7% of respondents did not know what the basis was, 6.6% gave no answer and 8% gave multiple answers indicating a similar lack of knowledge – a total of 22.3% reflecting lack of understanding. It can therefore be concluded from this study that a large number of these private shareholders had little or no understanding of the meaning of the value data related to the reporting of company plant and machinery.

Surprisingly, those with little accounting or financial experience appeared to understand the normal basis of valuation better than those with significant experience in these matters – 64.6% and 57.3%, respectively, indicating original cost less a deduction for depreciation. Not so surprising, on the other hand, was the finding that little more than one third of the respondents (37.3%) with no experience knew the usual valuation basis, the remainder giving a variety of responses or no response at all. (Significant at the 1% level).⁵

In general, those with some experience of accounting did seem more likely than those with no experience to understand the valuation principles underlying reported accounting information. However, it should be noted that, at least amongst these respondents, experience in accounting or financial management did not guarantee understanding. For example, 24% of those with significant experience believed plant to be usually valued on a current value basis, and 12.5% gave mixed answers including original cost and current values.

In view of the relationship between accounting experience and understanding of fixed asset valuation procedures, it would be expected that those respondents with occupations in accounting, investment, or financial management would tend to understand these principles better than those in other occupations, and this proved to be the case. 61.8% of those in such relevant occupations gave the correct normal valuation basis, compared with 50% of retired persons and 42.9% of those in other occupations. Again, not surprisingly, 32.2% of the miscellaneous grouping indicated current valuations, compared with 23.5% of the relevant occupation grouping and 20.8% of the retired grouping. (Significant at the 5% level).

Understanding of responsibility for reporting

The second test of the private shareholders' under-

⁵See Table B of the Appendix which shows the responses to this question analysed by accounting experience and occupation.

standing of the financial reporting function was to ask them to indicate who they believed to be legally responsible for producing and presenting company annual financial reports. Table 4 below outlines the general results of this inquiry.

TABLE 4
Understanding of reporting responsibility

Total number of respondents	374
	%
Respondents indicating that the legal responsibility for the annual financial report is in the hands of:	
the chairman of the company	6.4
the board of directors	41.2
the financial director	3.5
the company accountant	2.5
the company's auditors	7.8
Respondents giving other answers	0.6
Respondents stating they did not know who is responsible	12.2
Respondents giving multiple answers	20.5
Respondents giving no answer	5.3
	100.0

The above data reveal a distinct lack of understanding of this matter by the respondents. Approximately four out of every ten understood the board of directors to be responsible for reports; the other main categories being those who did not know (12.2%) and those who indicated that more than one person or group are responsible (20.5%). This latter category, particularly, reflects the lack of understanding by a sizeable number of persons (77 out of 374). Fortunately, the popular belief amongst accountants that investors believe auditors to be responsible for annual reports is not borne out by the respondents' answers.

As with the previous test of understanding, private shareholders who have a significant experience of accounting or financial matters obviously obtain some benefit from this. Their level of understanding is much higher, at least amongst these respondents, than it is for those persons with little or no experience. Table C of the Appendix shows that over half those with significant experience (55.3%) understood the board of directors to be responsible, compared with 44.4% of those with little experience, and 34.1% of those with none. Only 1% of those with significant experience indicated they did not know the answer to the question, compared with 8.8% and 18.6% of the other two groupings, respectively. (Significant at the 1% level).

A similar result was observed in analysing the answers to the question by respondents' occupations. Shareholders employed in accounting, investment

or financial management activities had the best understanding of reporting responsibilities of all the groups concerned. 54.4% indicated that the board of directors was responsible for the annual report, compared with 37.8% of retired persons and 39.9% of those in sundry occupations. (Significant at the 1% level).

Understanding the nature of reports

The next test of the respondents' understanding of the reporting process was an examination of their comprehension of the fundamental nature of reported accounting information – that is, whether it accurately, approximately or inaccurately reflects company financial progress and position. This was done as it was felt that shareholders may be misled into believing that accounting information can accurately describe company activity due to the seeming preciseness of the figures reported. Table 5 outlines the overall response.

TABLE 5

Understanding the nature of reports

Total number of respondents	374
	%
Respondents indicating annually reported accounting information gives:	
an accurate reflection of a company's financial progress and position	41.2
an approximation of a company's financial progress and position	40.2
an inaccurate reflection of a company's financial progress and position	6.5
Respondents giving other answers	0.5
Respondents stating they did not know the answer to the question	3.4
Respondents giving multiple answers	2.4
Respondents giving no answer	5.8
	100.0

Apart from a small number of 'do not knows', 'no answers', etc., and an equally small number indicating reporting inaccuracy, beliefs on this matter appear to be evenly divided between accuracy and approximation – that is, 41.2% and 40.2%, respectively. Thus, the fact that reported accounting information can only be regarded in approximate terms appears not to be understood by more than four in ten of these respondents. This is somewhat disturbing, but not surprising given the apparent authenticity of accounting figures (8).

Distinguishing responses by experience did not produce any dramatic differences so far as this part

of the survey was concerned.⁶ Indeed, responses to the question were similar in each category, with the exception of those with no relevant experience – their response to approximation was relatively lower (eight percentage points) than for other respondents at 36.2%, and their 'do not know' and 'no answer' answers relatively higher at 12.7%. In other words, they appeared, as in previous analyses, to have less understanding than those persons with significant or little experience. (The differences, however, were not significant at the 5% level).

Not surprisingly, those respondents in relevant occupations (such as accountancy, investment or financial management) indicated a higher level of understanding than those in other occupations or in retirement. 54.3% of those in relevant occupations believed financial statements were an approximation of the company's true economic situation, compared with 35.9% of retired persons and 37.6% of other disclosed occupations. On the other hand, 35.9% of the first grouping stated that they felt that financial statements gave an accurate reflection of a company's position and progress, compared with 45.3% and 42.3% of the other groups, respectively. (Significant at the 5% level). In all, approximately one of every two respondents with a relevant occupation appeared to understand the true nature of reported information. This corresponds with a similar lack of knowledge revealed in the analysis by experience.

Understanding of reporting objectives

The final test of shareholder understanding was different in nature from the three previous tests. Arguably, the need for the accountancy profession to specify the objectives of the financial reporting function is the single most important task facing it at the present time (9). The need for it is relatively clear – objectives must be stated before proceeding with requirements for particular reports for particular users. In other words, this is a necessary basis for progress in producing the most useful and relevant information for each significant user group.

Objectives must also be understood by users before they can make effective use of the available information. For example, if reported data are not intended for investment decisions, it is important that investors understand this point, and are not misled into thinking otherwise. For this reason, it was decided to ask the private shareholders concerned what they believed the present objectives of the company annual financial reports to be. Shareholders were

⁶See Table D of the Appendix for the full analysis of this question.

given a list of objectives to choose from, and the responses are given in Table 6 below. As there can be more than one objective of financial reports, multiple responses were to be expected, and the undernoted percentages therefore do not add up to 100%.

TABLE 6
Understanding reporting objectives

Total number of respondents	374
	— %
Respondents indicating the following as the main objectives of annual financial reports:	
to make company directors accountable to shareholders	59.3
to provide information for the Inland Revenue	14.7
to give shareholders an indication of the value of the company	49.7
to give shareholders an indication of the market value of their shares	13.3
to give shareholders data of use for investment decisions	19.7
to justify the dividend payments proposed by the company	29.9
Respondents giving other answers	6.1
Respondents stating they did not know what were reporting objectives	2.1
Respondents giving no answer	5.0

The responses elicited from respondents on this are of a mixed nature – that is, they contain certain favourable as well as unfavourable features. By far the most favourable response is that approximately six out of every ten respondents (59.3%) realised that a main aim of annual reporting is to make company directors accountable to shareholders – the so-called stewardship function which has had official support for many years (10) and has received support from respondents to a recent survey of opinions in this area (11). This result, coupled with the finding that only one in five respondents (19.7%) thought reports are intended for investment decisions, indicates that private shareholders may not be as ill-informed about present reporting objectives as might be otherwise supposed. Indeed, the investment decision result was supported by many individual comments from shareholders indicating that they felt that the present types of reports are of little use for investment decision making. These personal feelings and experiences may have coloured respondents' answers to this particular part of the questionnaire.

Contrary to the above results reflecting an apparent understanding of reporting objectives on the part of many respondents is the finding that almost one half of the respondents believed that the annual reports

attempted to show the value of companies. In this sense, despite the ambiguity of the term value, it is clear that the present type of reported information cannot possibly indicate value. Reliance on the principles of historic cost, realisation and conservatism prevent this. It is disturbing, although not altogether surprising, that so many respondents thought otherwise. However, it is apparent that respondents were able to differentiate between share values and company valuations for only 13.3% believed that annual reports could be used for the purpose of assessing the market value of shares.

The other data in Table 6 generally tend to confirm understanding (rather than lack of understanding) on the part of respondents. Only 14.7% felt reports are intended for the Inland Revenue, and 29.9% thought they help to justify dividend proposals. Similarly, only 7.1% of the respondents either did not know any reporting objectives or were unwilling to give any response. Overall, the results of this part of the survey reveal that the respondents appear to have a better understanding of reporting objectives than they may normally be given credit for, although it is clear that the general level of understanding is not as good as it could be.

None of the variables revealed significant differences in the analysis of shareholders' responses.⁷ Support for most of the objectives is strongest among those persons with significant accounting or financial management experience. For example, 67.7% of those with such experience understood stewardship to be a main objective, compared with 63.2% of those with little experience and 55.3% with no experience. Similarly, 26% of those with significant experience responded to the 'investment decision' objective whilst 24% and 14.3% of the other two respective groupings mentioned it.

Those respondents with accounting or financial management experience ought to have been in a better position to indicate reporting objectives than those persons lacking such experience. This could explain their higher response rate for most of the stated objectives. However, it must also be stated that significant experience does not prevent misunderstandings arising with regard to the aims of financial reporting. For example, 50% of this group mentioned the 'company valuation' objective and 17.7% considered 'share valuation' to be one of the main reporting aims.

The 'accountability' objective was mentioned most frequently in the retired, and accounting/investment/management categories (66.9% and 66.6%, respec-

⁷See Table E of the Appendix for the analysis of responses to this question.

tively). Retired persons also tended to respond to the 'Inland Revenue', 'company valuation', 'investment decision', and 'dividend justification' objectives in larger numbers than any other group.

Testing respondents' perception of their understanding

The tests above revealed the understanding of the respondents on four issues of reporting practice. By comparing the results of these tests with the respondents' perception of his or her own understanding, an indication is given as to whether or not the respondent had a true impression of the extent of his own comprehension.⁸

(a) *Understanding and valuation*

The first section of Table F examines those respondents stating their understanding or lack of understanding of reported accounting information, analysing their responses to the question of what valuation basis is normally used when reporting on company plant and machinery. The findings are interesting from several standpoints.

First, the respondents' perception of their own comprehension of accounting information is not always confirmed by an understanding of conventional valuation of plant – only 56.4% and 49.5% of the two groups of respondents who stated that they understood the information⁹ also indicated they understood that the conventional plant valuation basis was original cost less an allowance for usage. Secondly, the above percentages indicate that understanding of this matter is higher among those respondents who also find the information relevant for investment decision making. Thirdly, those respondents who stated that they did not understand reported information tended to confirm this lack of understanding in the area of valuation. Only 33.7% indicated the conventional basis; 22.8% stated they did not know the basis or gave no answer to the question; and, generally, they tended to respond more readily (in percentage terms) to the other valuation bases than did those respondents stating that they understood accounting information.

In other words, the main conclusion to be drawn from this analysis is that a significant percentage of respondents stating that they understood reported information did not appear to understand the

conventional plant valuation basis. In addition, those respondents who had a perceived lack of understanding of accounting information usually confirmed this in their responses to the valuation question.¹⁰

(b) *Understanding and responsibility*

This section generally reinforces the findings commented on in (a) above. Only 51% and 47.6% of the two 'understanding' groups in fact understood the board of directors to be responsible for the annual financial report. This compares with 21.7% of the 'do not understand' group. In addition, the latter group tended to highlight their lack of understanding by giving 'do not know' or 'no answer' responses – 45.7% did this.¹¹

(c) *Understanding the nature of reports*

The third section of Table F gives further clues as to the real lack of understanding of reported information by respondents, despite the fact that so many stated they understand it. 49.6% and 42.9%, respectively, of the two 'understand' groups stated that reported information gives an accurate reflection of a company's financial progress and position. These percentages are considerably higher than the equivalent one of 34.8% from the group which professes not to understand the information. Similarly, whereas only 38.9% of the 'understand and find relevant' group gave the appropriate response of approximation, 40.2% of the 'do not understand' group gave a similar response. In other words, a minority of respondents in each group indicated they understood the fundamental nature of financial reporting, and those in the 'understand' group appeared to have only as much understanding of this matter as those in the 'do not understand' group.¹²

(d) *Understanding and objectives*

The findings in this section are of a mixed nature. Firstly, respondents in the 'understand' groups tended, in general, to confirm their understanding to a greater extent than those in the 'do not understand' group. For example, 68.5% and 59% of the two 'understand' groups stated that accountability is a main objective of financial reporting, compared with 50% of the remaining group. However, by way of contrast, the 'understand' group also tended to reveal a lack of understanding of reporting objectives. For example, 57% and 46.7% of the two 'understand'

⁸Table F of the Appendix shows the analysis of perception of understanding by each of the four tests of comprehension.

⁹Those who understood accounting information and found it relevant for investment decision making, and those who understood the information but found it irrelevant for that purpose.

¹⁰The results of the analysis were significant at the 5% level.

¹¹The results of the analysis were significant at the 1% level.

¹²The results of the analysis were significant at the 1% level.

groups stated that a main objective is to give shareholders an indication of the value of the company. A lower percentage (43.5%) of the 'do not understand' group responded in a similar way. In other words, as in the main analysis of responses to reporting objectives, respondents tended to have less understanding of this important topic than of any of the others included in the questionnaire.¹³

Summary and conclusions

The aim of this study has been to provide indicators of private shareholders' level of understanding of the accounting information contained in the company annual financial report. Although the survey was limited to a small number of shareholders in one public company, the questions were limited to a few topics where understanding could be tested, and while the nature of the questions is possibly open to a certain amount of ambiguity (it is almost impossible to prevent this completely in a questionnaire survey), it is hoped that the findings warrant some attention on the part of accountants and managers concerned with improving the quality of financial reporting. The specific conclusions are given below:

(a) While over two-thirds (67.9%) of respondents stated that they understood accounting information, tests on various aspects of the reporting process revealed that actual knowledge was well below the respondents' perception of their comprehension. Indeed, under half of the shareholders knew (i) the usual method of valuing plant and machinery in the financial statements (47.9%); (ii) where responsibility for the financial statements lay (41.2%); and (iii) the approximate nature of accounting income and values (40.2%). In only one of the four tests of comprehension of the reporting process (that concerning the present objectives of annual financial statements) did a majority (59.3%) of the respondents show that they understood present practice – although, even in this case, half of the respondents (49.7%) incorrectly believed that an objective of financial statements was to give shareholders an indication of the value of the company. In the light of these results it would seem likely that the first hypothesis has not been disproved, in that an alarming degree of misunderstanding and ignorance of reporting practice has been evidenced amongst these private shareholders.

(b) What is possibly even more startling is the finding that, in each of the four tests of understanding, almost half of the respondents who stated

that they understood accounting information and found it relevant for investment decision making gave an answer revealing their ignorance of reporting practices. For example, only 56.4% of this group showed that they understood the valuation basis for plant and machinery; 51% knew that the board of directors was responsible for the annual financial report; 38.9% realised that reported accounting data are of an approximate nature; and 57% thought that a main objective of reporting was to give shareholders an indication of the value of the company.

The fact that, in many cases, both those who believed that they understood accounting information but found it irrelevant for investment purposes, and those who felt that they did not understand the information, revealed an even greater degree of ignorance is, in itself, not so alarming. By thinking that financial statements are relevant for investment decision making, however, respondents with a false belief in their degree of knowledge about reported data could not only fail to interpret correctly the messages presented by the reporting accountant, but could possibly make a serious investment decision mistake.

(c) In all four of the tests of understanding, those respondents with some experience of accounting matters revealed a greater knowledge of reporting practice than did those with no such experience. It should, however, be noted that those with significant experience of accounting did not reveal a considerably greater degree of comprehension than those with little experience. Similarly, those at present employed in accountancy, investment or financial management also revealed a greater knowledge of the reporting process than those in other occupations or in retirement.

(d) In the tests of comprehension, those respondents with some experience of accounting revealed a greater (though still poor) knowledge of reporting practice than those with no such experience; and in three of the tests those respondents involved with accountancy or finance in their employment also revealed a higher knowledge than those in other occupations. There would therefore appear to be a good case for not rejecting, for the present, the second hypothesis which this paper sought to test – namely, that those shareholders with more knowledge or experience of accounting are more able to understand financial reports than those with a lesser knowledge or experience of the subject. More detailed testing, and an investigation of the relatively small differences in understanding between those respondents with a considerable degree of accounting experience and

¹³The results of the analysis were significant at the 10% level.

those with little experience, is necessary before a more positive verdict on the hypothesis could be reached.

(e) It should be noted at this stage, however, that accounting education or experience appears to be no guarantee of knowledge of reporting practice. While only 6.3% of respondents with a significant degree of accounting or financial experience, and only 11.1% of those employed in accountancy, investment or financial management, stated that they did not understand reported accounting information, the responses of these two groups revealed a considerable degree of ignorance of reporting practice. For example, of those respondents with a significant degree of accounting experience, only 57.3% appeared to know the usual valuation basis for plant and machinery; 55.3% knew the board of directors was responsible for annual financial reports; less than half (44.8%) knew that accounting information gave an approximation of a company's financial performance; and exactly half incorrectly believed that a main objective of financial statements was to give the value of the company. Similar responses were given by those employed in accountancy, investment or financial management.¹⁴ While these results are better than the sample average, they reveal some serious misunderstandings among those shareholders whom reporting accountants must assume to be the most financially sophisticated of private shareholder users, and those who would be more likely to make use of financial reports.

(f) The above conclusions and survey results have several implications for companies and their reporting accountants. The topics with which these shareholders were tested were relatively fundamental in nature. The general lack of understanding of these basic points shown by a considerable proportion of the respondents casts doubts on the ability of private shareholders to comprehend the far more complex aspects of asset valuation and income determination. Clearly, before the situation can be improved, more research is required to isolate the areas of user misunderstanding of company financial reports to discover where confusion of accounting practices and terminology may exist.¹⁵ Once this has been

undertaken, the reporting accountant would be more aware of the problems caused by the assumption that users of his financial reports are financially sophisticated.

(g) Realising which aspects of financial reports are not understood by a large proportion of private shareholders is, however, not sufficient. What is then required is the discovery of (i) what can be done to improve user comprehension; and (ii) whether such an improvement is necessary. Considering the latter problem first, if the less knowledgeable shareholders rely on experts to make their investment decisions for them¹⁶ then there would appear to be little point in attempting to alter the present system of reporting if such users had little interest in these changes.¹⁷ The evidence presented here, however, has shown that a considerable proportion of private shareholders believed that they understood reported accounting information when, in fact, their comprehension appears to be very limited. It is these shareholders who are in most danger of misunderstanding or misusing the reporting accountant's financial messages.

(h) What then can be done? It is clear that certain private shareholders appear not to understand present reporting practices even if they are educated in accounting or financial matters. Experience of and education in accounting does, however, appear to improve private shareholder knowledge of reporting practice, and is one possible means of increasing shareholder comprehension. The fact that those shareholders who are experienced or educated in accounting or financial matters did not reveal a particularly high level of understanding, leads to the impression that education may not be enough. There would still appear to be obstacles to a proper understanding of the present type of company financial report.

(i) Obviously, further research is required into methods of improving private shareholders' understanding. There are several avenues to explore in an attempt to make the private shareholder more aware of reporting practice. For example, it could

¹⁴The responses of this group were as follows: usual valuation of plant and machinery, 61.8%; responsibility for financial statements lies with the board of directors, 54.4%; accounting information gives an approximation, 54.3%; and a main objective of financial statements is to give the value of a company, 48.1%.

¹⁵This is currently being undertaken by the researchers in a project financed by The Institute of Chartered Accountants in England and Wales.

¹⁶For example, the data when analysed by sex reveal that women respondents had less understanding of financial reporting practice than had men respondents. Questionnaire comments also revealed that many more women than men admitted to using stockbrokers to assist them in their investment decisions.

¹⁷Evidence on this point is being sought in the researchers' current survey work. It should be noted, however, that, although lack of interest by certain private shareholders in reporting changes and improvements may not justify changes from their point of view, justification for such changes may well lie with the supposedly more sophisticated users such as institutional investors.

be that a more specific form of education in financial reporting matters is required for private shareholders; or shareholders could be reminded of the objectives of financial reports so that they do not inadvertently use reported data for purposes for which they were not intended. Or finally, the entire basis of the presentation of accounting information may have to be thoroughly examined. (j) Clearly, it would seem that the companies and their reporting accountants require to give careful consideration to the problem of communicating efficiently and relevantly to shareholders. If the reporting accountant is to fulfil his function of communicator then it is not sufficient for him to concentrate on the production of financial statements which comply with the rather narrow limits of the legally required true and fair view. This is only part of his function. An equally vital aspect is the need to ensure that his view of the company's financial progress and position is transmitted in terms which can be understood by a greater proportion of private shareholders than would appear, on the basis of this survey, to comprehend the accountant's message at present.

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- (8) See W. J. Bruns, 'Accounting Information and Decision-Making: Some Behavioural Hypotheses', *Accounting Review*, July 1968, p. 472. As Bruns stated: 'There is an aura of authenticity that surrounds accounting data, and to the untrained user of information, accounting may appear to be a perfect source. We must recognise, however, that few, if any, of the persons who have processed or reviewed the data and the procedures that have converted it to information would consider it perfect.'
- (9) This can be evidenced in the ASSC discussion paper, *The Corporate Report*, as well as in the Report of the Study Group (note 3 above).
- (10) See, for example, 'Accountants' Liability to Third Parties', *Statement V8*, The Institute of Chartered Accountants in England and Wales, 1965.
- (11) B. Carsberg, A. Hope and R. W. Scapens, 'The Objectives of Published Accounting Reports', *Accounting and Business Research*, Summer 1974, pp. 162-173.

TABLE A

Further analysis of understanding and relevance

Identified characteristics of respondents	Total n = 374					
	Understand information and find relevant	Understand information and do not find relevant	Do not understand information	Other answers	No answer given	Total
	%	%	%	%	%	%
<i>Experience:</i> significant accounting or financial experience little accounting or financial experience no accounting or financial experience not disclosed	96	31.2	6.3	1.0	1.1	100.0
	79	29.2	20.3	6.3	3.6	100.0
	188	26.6	35.2	1.5	6.9	100.0
	11	18.1	36.4	9.1	9.1	100.0
<i>Occupation:</i> retired accounting, investment, etc. sundry not disclosed	106	18.9	20.8	1.8	4.7	100.0
	81	38.3	11.1	2.4	1.2	100.0
	168	29.8	33.4	2.9	5.3	100.0
	19	21.1	26.4	5.2	15.7	100.0

TABLE B

Further analysis of understanding of valuation principles

Identified characteristics of respondents	Total n = 374									
	Original cost	Original cost less an allowance for usage	Current second-hand selling value	Current replacement cost	Other answers	Did not know	Multiple answers	No answer given	Total	
	%	%	%	%	%	%	%	%	%	
<i>Experience:</i> significant accounting or financial experience little accounting or financial experience no accounting or financial experience not disclosed	96	2.1	9.4	14.6	1.0	—	12.5	3.1	100.0	
	79	1.3	14.0	5.0	—	—	8.8	6.3	100.0	
	188	2.7	13.9	18.1	1.0	14.3	5.3	7.4	100.0	
	11	—	18.2	—	—	18.2	9.1	27.2	100.0	
<i>Occupation:</i> retired accounting, investment, etc. sundry not disclosed	106	1.0	8.5	12.3	1.0	8.4	9.4	9.4	100.0	
	81	2.5	9.9	13.6	1.2	—	9.8	1.2	100.0	
	168	3.0	16.7	15.5	0.6	10.7	5.9	4.7	100.0	
	19	—	15.8	10.6	—	10.5	10.5	31.5	100.0	

TABLE C

Further analysis of understanding of reporting responsibilities

Identifiable characteristics of respondents	Total n = 374	Company chairman	Board of directors	Finance director	Company accountant	Auditor	Other answers	Did not know	Multiple answers	No answer given	Total
<i>Experience:</i> significant accounting or financial experience	96	6.3	55.3	6.2	3.1	1.0	—	1.0	24.0	3.1	100.0
little accounting or financial experience	79	7.6	44.4	1.3	3.8	8.9	2.6	8.8	18.9	3.7	100.0
no accounting or financial experience	188	7.0	34.1	3.2	1.6	11.1	—	18.6	18.6	5.8	100.0
not disclosed	11	—	18.2	—	—	—	—	27.3	27.3	27.2	100.0
<i>Occupation:</i> retired	106	6.7	37.8	2.9	1.8	3.7	—	14.1	26.4	6.6	100.0
accounting, investment, etc.	81	5.0	54.4	2.5	2.4	7.4	—	2.4	25.9	—	100.0
sundry	168	7.2	39.9	4.8	2.9	11.3	1.2	14.9	13.7	4.1	100.0
not disclosed	19	5.3	15.8	—	—	—	—	21.1	26.3	31.5	100.0

TABLE D

Further analysis of understanding of nature of reports

Identifiable characteristics of respondents	Total n = 374	Accuracy	Approximation	Inaccuracy	Other answers	Did not know	Multiple answers	No answer given	Total
<i>Experience:</i> significant accounting or financial experience	96	42.8	44.8	6.3	1.0	—	2.0	3.1	100.0
little accounting or financial experience	79	39.3	44.4	6.4	—	1.2	5.0	3.7	100.0
no accounting or financial experience	188	42.6	36.2	6.4	0.6	5.9	1.5	6.8	100.0
not disclosed	11	18.2	36.4	9.1	—	9.1	—	27.2	100.0
<i>Occupation:</i> retired	106	45.3	35.9	1.9	—	3.8	4.7	8.4	100.0
accounting, investment, etc.	81	35.9	54.3	6.2	1.2	—	1.2	1.2	100.0
sundry	168	42.3	37.6	8.4	0.6	4.1	1.7	5.3	100.0
not disclosed	19	31.6	26.4	15.8	—	10.5	—	15.7	100.0

TABLE E
Further analysis of understanding of reporting objectives

<i>Identifiable characteristics of respondents</i>	<i>Total n = 374</i>	<i>Account- ability of directors</i>	<i>Inland Revenue</i>	<i>Company values</i>	<i>Share values</i>	<i>Invest- ment decisions</i>	<i>Dividend proposals</i>	<i>Other answers</i>	<i>Did not know</i>	<i>No answer given</i>
		%	%	%	%	%	%	%	%	%
<i>Experience: significant accounting or financial experience</i>	96	67.7	16.6	50.0	17.7	26.0	30.2	9.3	1.0	2.0
<i>little accounting or financial experience</i>	79	63.2	18.9	56.9	13.9	24.0	32.9	3.7	1.2	2.5
<i>no accounting or financial experience</i>	188	55.3	12.7	45.7	10.6	14.3	29.2	5.8	2.6	6.9
<i>not disclosed</i>	11	27.2	—	63.6	18.1	27.2	18.1	—	9.0	18.1
<i>Occupation: retired</i>	106	66.9	23.5	64.1	8.4	28.3	44.3	7.5	0.9	6.6
<i>accounting, investment, etc.</i>	81	66.6	16.0	48.1	17.2	24.6	20.9	6.1	2.4	—
<i>sundry</i>	168	53.5	10.1	42.2	13.6	12.5	26.7	5.9	2.3	4.1
<i>not disclosed</i>	19	36.8	—	42.1	21.0	15.7	15.7	—	5.2	26.3

TABLE F

Cross-analysis of understanding

	<i>Understand information and find relevant</i>	<i>Understand information and do not find relevant</i>	<i>Do not understand information</i>
Analysable responses	149	105	92
	%	%	%
<i>Understanding and valuation</i>			
Original cost	2.0	1.9	2.2
Original cost less an allowance for usage	56.4	49.5	33.7
Current second-hand selling value	10.1	13.3	16.3
Current replacement cost	14.8	13.3	16.3
Other answers	0.7	1.0	—
Did not know	4.0	4.8	15.2
Multiple answers	4.0	5.7	8.7
No answer given	8.0	10.5	7.6
	100.0	100.0	100.0
<i>Understanding and responsibility</i>			
Company chairman	7.4	5.7	6.5
Board of directors	51.0	47.6	21.7
Finance director	3.4	3.8	4.3
Company accountant	1.4	1.9	5.4
Auditor	6.0	8.6	9.8
Other answers	—	1.0	1.1
Did not know	2.0	7.6	27.2
Multiple answers	4.0	5.7	5.5
No answer given	24.8	18.1	18.5
	100.0	100.0	100.0
<i>Understanding and nature of reports</i>			
Accuracy	49.6	42.9	34.8
Approximation	38.9	42.8	40.2
Inaccuracy	4.7	7.6	7.6
Other answers	—	—	1.1
Did not know	—	—	10.9
Multiple answers	3.4	4.8	4.3
No answer given	3.4	1.9	1.1
	100.0	100.0	100.0
<i>Understanding and objectives</i>			
Accountability of directors	68.5	59.0	50.0
Inland Revenue	16.1	13.3	13.0
Company values	57.0	46.7	43.5
Share values	12.1	9.5	17.4
Investment decisions	24.2	16.2	16.3
Dividend proposals	29.5	24.8	32.6
Other answers	2.7	9.5	4.3
Did not know	0.7	1.0	5.4
No answer given	1.3	2.9	4.3

Information Requirements of Users of Published Corporate Reports – Unit Trusts

Douglas H. Briggs

This research has been undertaken as a first step to try to discover what information the users of published financial reports might require. It was a pilot survey to test the research method and to see if there is any point in pursuing this line of enquiry or in attempting to develop other enquiries.

This research is not unique. Other enquiries have been or are being made, but because this kind of enquiry is so fundamental to the development of improved accounting practices, overlap and possible duplication of research effort is probably not wasteful. It would be pretentious for any one researcher to advocate changes in the accounting system on the basis of his own research alone. That there is a need for this kind of research is not to be justified in this paper; there is ample justification elsewhere.¹

It was decided to concentrate on the unit and investment trusts because one could expect their managers to be relatively sophisticated users, and because the institutions could be easily identified. As investigations began, it became clear that few trusts conducted their own basic research, but instead relied on circulars and other information regularly supplied by stockbrokers, especially those with large analytical research departments. For this reason, and because some had their own unit trusts, the enquiry had to be extended to include stockbrokers and a few merchant banks.

The research method

Because of the exploratory nature of the research, it was thought that personal discussion with people in the various firms would be the best method, although expensive in terms of time and travel. In order to ensure a degree of consistency in the conversations, a list of questions was prepared and circulated to willing volunteers in advance of the interview. The questions were not intended to form the basis of a questionnaire, but were rather an outline of the

topics to be discussed. The questions were in three broad categories: the first dealt with the background of the analysts in each firm and their use of the information currently available, the second with their assessment of the usefulness of this information and the third with the possible usefulness of different information regardless of whether or not it might be practicable to provide such information.

The more important discussions will be considered here and some general observations made. The detailed discussions prompted by each question will not be dealt with; it was found that some questions were unimportant. Because of the small number of interviews (twenty-five) and because the discussions were broad, it has not been possible or appropriate to apply any statistical tests. This report must be seen as a subjective review of opinions expressed during interviews.

The investigation

More than half the interviews were conducted with stockbrokers, and others with unit or investment trusts including some merchant banks which have their own trusts. The response from firms initially approached was high, at about 60% and almost all of those who responded to the initial approach were prepared to be interviewed. Each interview lasted about an hour.

The questions were designed not to be too technical and to be capable of being understood by the least sophisticated of those interviewed. Given the need to keep discussions broad and not too long, some detailed enquiries which may need to be pursued in a later investigation were not raised. Since the research was by personal interview, some modifications were introduced into the discussions to accommodate variations in the circumstances and degree of sophistication of those being interviewed. The overriding consideration was to preserve a fair degree of consistency between the interviews.

The results of the discussions will be reviewed in the three categories into which the questions fell: background, usefulness of information and possible information requirements.

¹For example:

Peasnell, K. V., *The Usefulness of Accounting Information to Investors*, ICRA Occasional Paper No. 1, 1973.
Carsberg, B., Hope, A. and Scapens, R. W., 'The Objectives of Published Accounting Reports', *Accounting and Business Research*, Vol. 4, Summer 1974, p. 162.

The following commentary must be seen as a subjective review of discussions:

(a) *Background* (or stating the obvious)

Most of the analysts are broadly professionally qualified and a significant proportion (over one fifth) are accountants. Published accounting reports are generally regarded as being essential and of basic importance for building up a file of information about a company. Accounts are usually irrelevant for short-term or immediate investment decisions, these being based on market prices of shares. Only one trust manager was prepared to argue that accounting reports were entirely irrelevant. His trust was by no means an unsuccessful one.

Just as there was almost unanimous agreement that accounting reports were essential, there was only a little less strength in the view that the other information available was at least as useful. This includes trade journals, industry and government statistics, direct contacts with companies and, for secondary users (trusts), brokers' circulars and other information about companies and industries freely made available by stockbrokers. Some of this information is derived from accounting reports. Company visits are of importance to analysts, especially in stockbroking firms. They argued that the information they sought was not inside information, but information which any sufficiently interested shareholder could obtain. Apart from seeking some elaboration of published accounts, the visits were used to obtain more up-to-date information, to assess management and, if possible, find out about future plans.

Accounting reports are used to observe trends in company performance, to compare different companies in broadly the same industries, but are not used to compare companies in different industries. Most analysts expressed reservations about comparative analysis because of the variations in accounting methods.

(b) *How useful is the information?* (stating the not so obvious)

Some observations about usefulness may be made by examining the extent to which analysts attempt to alter published accounts. Most claim to make some adjustments. These adjustments are mainly to promote consistency in accounting method within a company through time and between companies. There was general recognition that the way in which information was presented (or not presented) limited the opportunities to make adjustments and that those which could be made were probably superficial, for example changing the classification of items in the balance sheet. The removal of the effect of non-recurring or abnormal items from

profit was an important adjustment.

More revealing, however, was the approach to asset values. Approximately half of those interviewed claimed that they made some attempt to modify at least some asset values given in balance sheets. Most efforts were applied to property companies and to companies which had substantial property holdings, but efforts were not limited to these assets in all cases. In some cases it extended to plant and equipment. There was a preference for liquidation values in the possible likelihood of break-up and for replacement cost in continuing companies. Some analysts freely admitted that their estimates were guesses.

The concern with asset values is reinforced by the number of analysts who attempt to discover the age of assets (well over half), although, again, some admitted that it was guesswork.

There was only a minority who claimed to adjust the measure of accounting profit for the effect of inflation, and then only to a limited extent. Others expressed the view that there was no way of doing it.

Without exception, funds statements were used if they were published and most analysts prepared one if necessary. Most attempted to estimate future cash flows.

As far as specific pieces of information were concerned, earnings (or profit), earnings per share and cash flow or liquidity measures were the most important. Most analysts calculated some measure of the rate of return on capital and claimed that it helped them to observe changes through time and between companies. During the period of the enquiry there was a noticeable increase in the preference for a liquidity measure rather than for earnings.

(c) *What information should be provided?* (the jackpot question)

To ask the question 'What do you want?' would yield a variety of answers not all of which would be relevant. Some questions offering specific choices were asked, thus increasing the subjective nature of this investigation. These choices were broadly based on the current value methods and on some of the possible practical implications of these methods. Although no specific question on CPP accounting was asked, unsolicited opinions were nevertheless forthcoming which were generally unfavourable. The method was believed to be confusing and the asset values to have little meaning.

There was a preference for replacement cost (about two-thirds), although about half expressed interest as well in a measure of realisable value, but sometimes with the reservation that the latter

approach should be applied only if liquidation were expected. There was hardly any interest in a measure of value to the firm (based on replacement cost or realisable value depending on the circumstances) since it was thought to be too subjective.

There was evidence of a lack of understanding of the way in which an exit price system of accounting would work. Replacement cost has been advocated by the Society of Investment Analysts and clearly many analysts had been influenced by this. Despite this preference, there was considerable interest (two-thirds) in the notion that the difference between the rate of return based on replacement cost of assets and the rate of return based on realisable value could be a measure of an aspect of risk in a company and as such would be useful for analysts. This is supported by the view that inflexibility in a company's activities may be an element of risk.

As far as income is concerned, there was an overwhelming view that trading (recurring) income should be separated from non-trading, and that realised and unrealised income should be separated. Even so, one-third of those interviewed were not prepared to have unrealised gains (both capital and trading, if there is a distinction) either recorded or reported.

The possibility of changing the income concept in accounting may well have an effect on the pattern of reporting income through time. The present system has certain smoothing effects which are inherent. In reply to a specific question, the unacceptability of profit smoothing was stronger than the unacceptability of wide variations from year to year. Moderate variations were the least unacceptable.

Most of the discussions were based on the implied view that some kind of income measurement and of financial position reporting would continue. Nonetheless, the question of published profit forecasts was not ignored. Here opinion was fairly well divided, and most who favoured such forecasts qualified their opinions.

Conclusions

It would be misleading to attempt to draw firm conclusions from this research. However, observations can be made and some views can be formed as to how research in this area might proceed.

Analysts need to be exposed to the possibilities of the operation of an exit price accounting system, and the implications need to be explained. Meanwhile their advocacy of replacement cost should be seen as a choice between replacement cost and CPP accounting and not as a choice from a wider selection.

There may be some justification for multi-column

(or multi-concept) accounting. The view that the inflexibility of a company's activities is an element of risk lends support to the idea that both replacement cost and realisable value based systems should be used. The difference between the rates of return on assets measured according to each method may provide an indication of inflexibility. The methods of asset valuation may be better viewed as being complementary rather than being mutually exclusive.

The realisation concept should be re-examined to ensure that a useful purpose is served by making a distinction between realised and unrealised income. There was evidence of confusion over the need to have an objective measure of the effect of transactions and of economic events on the firm, and the need to measure distributable income – two distinct applications.

Analysts have an important role as interpreters and digesters of published accounting reports. The information contained in the reports should not be geared to the needs of unsophisticated laymen at the expense of the efficient operation of the capital market.

As far as future research is concerned, there are at least three lines of enquiry which may be attempted:

- (a) A quantitative evaluation of the verifiability and reliability of different asset valuation methods should be attempted.² Unless it can be demonstrated to users that alternatives to historical cost are reliable and verifiable, they are unlikely to be enthusiastic about radical changes in the accounting system.
- (b) It may be helpful to attempt to restate accounts in selected companies in terms of different accounting methods to find out what difficulties arise and to discover the effects on the financial reports.³
- (c) Further interviews along the same broad lines of this enquiry, especially in life assurance companies and pension funds, may be worthwhile, although a form of interview which facilitated quantitative aggregation and statistical analysis would be desirable.

Acknowledgement

Financial assistance from the Alexander Stone (Business Management Education) Trust is gratefully acknowledged.

²McKeown, J. C., 'An Empirical Test of a Model Proposed by Chambers', *Accounting Review*, Vol. XLVI, January 1971, p. 12; 'Comparative Application of Market and Cost Based Accounting Models', *Journal of Accounting Research*, Vol. 11, Spring 1973, p. 62.

³A similar suggestion has been made by Bell, E. O., 'The State of Current Value Accounting', *Accounting Review*, Vol. L, April 1975, p. 244.

The Concept of Profit for Fund Raising¹

G. H. Lawson and A. W. Stark

I. Introduction and summary

The substance of this paper is the proposition that the concept of profit necessary for fund raising is essentially synonymous with the theoretical framework on which profit measures for all other *ex ante* and *ex post* operational purposes ought to be based. Fund raising thus constitutes a useful practical example with which widely applicable principles can be illustrated.

The discussion in the following section is intended to facilitate the specification of a company as a detailed total cash flow model in an attempt to relate fund-raising to other important problem areas in financial management.

Section III of the paper compares the total cash flow model of a company with the conventional (accruals) accounting model and indicates the principal differences between the two from a measurement standpoint. This is followed by some consideration of the determinants, namely, relative price changes and growth, of the *numerical* differences between the cash flow and accruals accounting models and the section is illustrated with the financial performance of the company sector for the period 1968-74.

Section IV interprets the differences between the cash flow and conventional accounting approaches. It is suggested that these differences represent cost omissions from the conventional income statement, and the implications of correcting for the latter are also considered.

The concluding section raises some of the wider implications of the use of conventional accounting approach from three standpoints, namely, fund-raising, taxation, and *ex post* financial performance measurement.

II.i. Company as a cash flow model

In outlining the general nature of fund raising, the relationship between a company and its financial

environment can be represented as in Figure 1. This diagram is intended to convey that as a financial system (or sub-system) a company is directly related to basically five other financial systems (each of which is discussed below). A necessary condition for the maintenance of these relationships is the continuing prospect that the economic activity organised in the trading and production sub-system (alternatively, operating system) will generate an adequate flow of cash into the company. The operating cash flowing into the company tank will be of an acceptable magnitude if, among other things, it enables the company not only to meet its interest payments and debt retirement schedules (some part of which may stem from the time-profile peculiarities of the operating cash flow itself), but also remunerate shareholders to an extent commensurate with the higher risks they bear compared with other fund providers to the same company.

II.ii. Trading and production

The trading and production sub-system is, roughly speaking, represented by an existing asset stock (including operatives and management) which in turn constitutes current and future earning power (or cash flow generating capacity). This notion also includes the possibility of adjustments to the existing asset stock, and hence to future earning power, by means of capital expenditure programmes which may also imply manpower modifications.

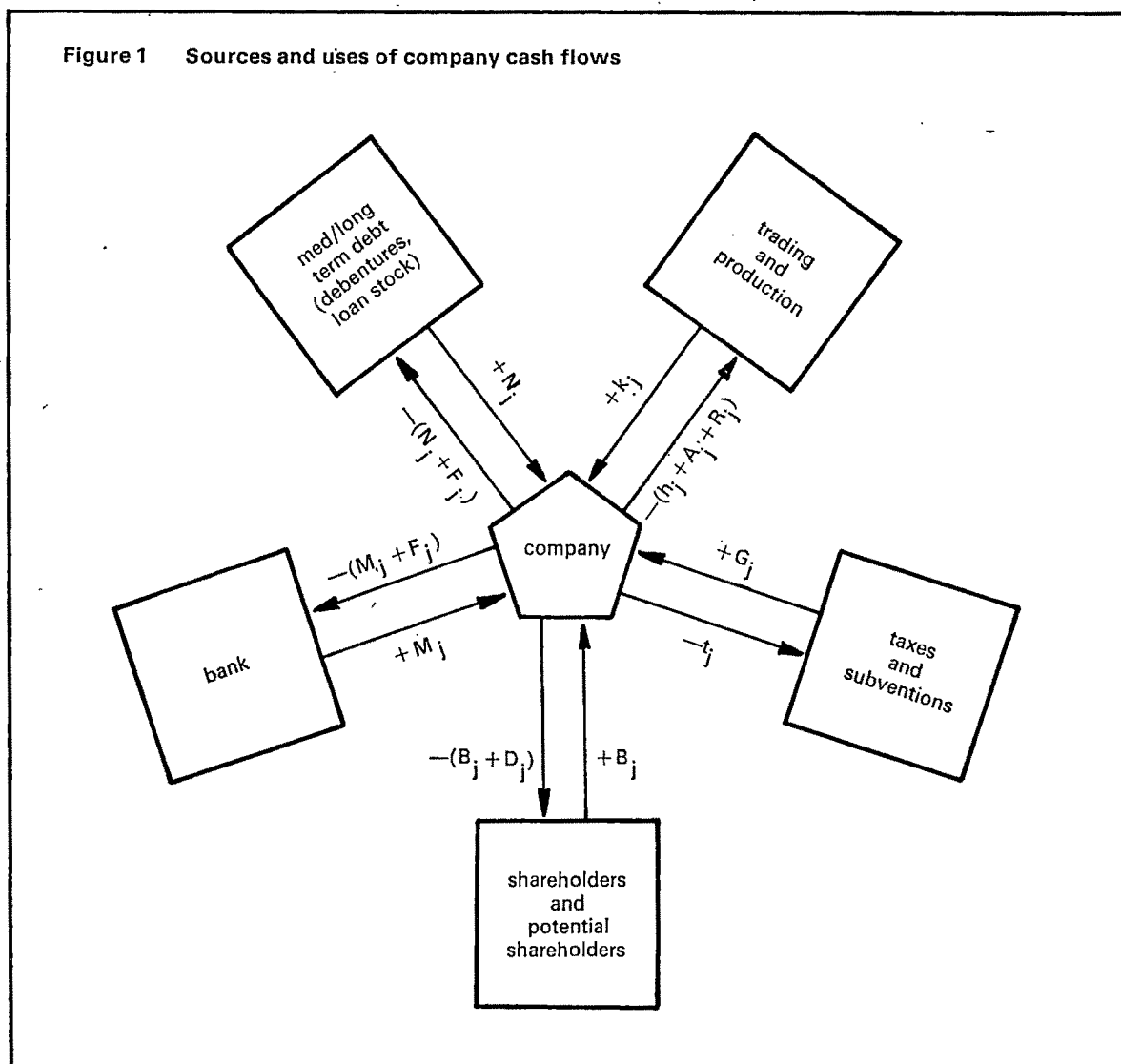
As a cash flow sub-system, trading and production will generate a continuous flow of sales receipts, k_j , into a company in any year j if sales of goods and/or services can be maintained on a continuing basis to solvent customers. In operating an existing trading and productive asset stock to generate sales receipts, k_j , it is necessary to incur operating costs (including wages, materials, variable overheads and fixed overheads, etc.) which sooner or later become operating cash outflows, h_j .

In that components of an existing asset stock become economically inefficient they need to be

¹Paper presented to the Royal Economic Society at the University of Sussex, 23 September 1975.

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Figure 1 Sources and uses of company cash flows



displaced thus giving rise to replacement expenditure, A_j . Now whilst a necessary condition for the continuity of a business at a *given* scale of trading and productive activity is that 'on average' its operating cash flow, $k_j - h_j$, is greater than replacement investment A_j , special circumstances in an individual year (or two!) may, as already implied, result in $k_j - h_j < A_j$. In these circumstances, a 'replacement' financing problem emerges which characteristically will be resolved by making use of the other sub-systems to provide bridging finance which, with the addition of interest, is to be repaid from (future) operating cash flows minus replacement investments, ie, is to be repaid from future period values of $k_j - h_j - A_j$.

Aside from being financially viable in the sense that it is 'on average' capable of fulfilling the condition (for a given scale of trading and productive

activity) $k_j - h_j - A_j > 0$, a company may have opportunities eg, growth or capacity-creating investment proposals requiring investment, R_j , and promising returns $\Delta(k_j - h_j)$ which, having due regard to the degree of risk and uncertainty inherent in such proposals, provide a commensurate time-discounted return on R_j , no matter how the latter is financed.

Aside from the impact of taxes and cash grants, growth investment, R_j , or some part thereof, will, *in an individual year*, require (external) financing in the sense of drawing on one or more of the other financial sub-systems if $k_j - h_j - A_j - R_j < 0$. The precise amount of external financing negotiated may depend upon a combination of institutional factors, managerial preferences, and beliefs about the relative costs of debt and equity as a function of the company's debt ratio, etc.

II.iii. Taxes, etc.

As a financial variable, corporate taxes less cash grants (if any) have a very significant impact on corporate finances, generally speaking, and cannot be left aside in analysis germane to profit concepts in the fund-raising context. Fundamental considerations which are raised by the presence of taxes and cash grants include the basis of corporate taxes, together with their influence on decision making, and their effect on 'fund' servicing capacity including debt redemption.

Returning to the preliminary analysis sketched out above², an existing business will, introducing tax payments, t_j , and cash grants G_j , be worth operating at a given scale of trading and productive capacity if 'on average' $k_j - h_j - A_j - t_j + G_j > 0$. Provided tax payments, t_j , are based on $k_j - h_j - A_j + G_j$, and the corporate tax rate, T_j , is set below 100%, taxes *per se* cannot negate the financial viability of ongoing operations.

Similarly, taxes will have a neutral effect on a growth investment decision necessitating investment R_j and promising cash flows $\Delta(k_j - h_j)$ provided R_j is (instantaneously) tax-deductible and project cash flows $\Delta(k_j - h_j)$ are instantaneously taxable at the same tax rate T_j .³

As recent history has shown,⁴ the UK basis of taxation neither precludes the possibility that corporation tax *per se* may negate the financial viability of both ongoing operations and new investment, nor does it have a neutral effect on mutually exclusive investment alternatives which do not happen to be rendered financially non-viable by the incidence of the tax. The fact of the matter is that the positive determinant of corporation tax payments, that is, 'assessable profits for tax purposes', e_j , is measured on an accruals basis.⁵ The difference between operating cash flow, $n_j (=k_j - h_j)$, and e_j , which is elaborated below, represents periodic working capital

investment, p_j . At this juncture it is sufficient to state that whilst $e_j > n_j$ is virtually axiomatic, the conditions under which $e_{j-1} > n_j$ have also been generally present in the UK since at least 1968. Such conditions would appear to include an acceleration in the rate of cost increases which has been less than fully matched in real terms on the income side.

The significance of the possibility that $e_{j-1} > n_j$ is as follows: not only are profits for tax purposes measured on an accruals basis, the taxes thereon are paid at least one year later, generally speaking. Thus, aside from other tax deductions including advance corporation tax and the new stock appreciation allowance, a tax payment, t_j , due in year j is given by:

$$t_j = T_{j-1}(e_{j-1} - A_{j-1})$$

Consequently, the simple 'on average' condition (as hitherto outlined) on which it is worth operating an existing business at a given scale of capacity taking cognisance of the UK basis of corporation tax is therefore:

$$n_j - A_j - T_{j-1}(e_{j-1} - A_{j-1}) + G_j > 0$$

Now if, as in recent years in the UK, $e_{j-1} > n_j$ for any pair of years $j-1$ and j , the effective rate of corporation tax on operating cash flow, n_j , will be higher than the nominal rate T_{j-1} . The greater the amount by which e_{j-1} exceeds n_j , the greater the leverage on the effective rate of corporation tax on operating cash flow vis à vis the nominal corporation tax rate and vice versa. Furthermore, if, as is not unlikely, (tax deductible) replacement capital expenditure tends to increase in money terms over time, ie, if $A_j > A_{j-1}$, a further leverage element on the effective rate of tax is present.

The stock appreciation tax deduction introduced in November 1974 represents a partial constraint on the effective rate of tax on operating cash flow minus (tax deductible) replacement investment, that is, on $n_j - A_j$. As aggregate company sector statistics for all four quarters of 1974 suggest, the phenomenon of effective tax rates even exceeding 100% could not be precluded.⁶ The new stock appreciation tax deduction ameliorates the simple 'on average' condition as indicated by (i).

$$n_j - A_j - T_{j-1}[e_{j-1} - (f_{j-1} - 0.1e_{j-1}) - A_{j-1}] + G_j > 0 \quad (i)$$

In inequality (i) f_{j-1} stands for the increase in a company's inventory values between the beginning and end of period $j-1$. As explained below, f_{j-1} is only one of three elements in the relationship between n_{j-1} and e_{j-1} .

²This preliminary analysis is of an equity-financed company which, excluding cash grants and 'occasional' short term needs, derives all new finance from internal sources.

³For example, the imposition of a tax at the rate T_j on a project costing R_j , all of which is tax deductible expenditure, will change a project's net present value from:

$$\sum_{j=1}^n \frac{\Delta(k_j - h_j) - R_j}{(1+r)^j} \quad \text{to} \quad \sum_{j=1}^n \frac{[\Delta(k_j - h_j) - R_j](1 - T_j)}{(1+r)^j}$$

and scale down all other mutually exclusive alternatives accordingly.

⁴See Illustration I, page 34.

⁵For most practical purposes assessable profits for tax purposes, e_j , are synonymous with (conventional) pre-depreciation profit.

⁶See Illustration I, page 34.

Thus,

$$e_{j-1} - n_{j-1} = p_{j-1} = f_{j-1} - i_{j-1} + l_{j-1} \quad (\text{ii})^7$$

Hence, a stock appreciation tax relief of $(f_{j-1} - o.l.e_{j-1})$ will only limit the effective rate of corporation tax on a current year's operating cash flow *minus* replacement investment, ie, on $n_j - A_j$, to the nominal rate of that tax if:

$$n_j - A_j \geq e_{j-1} - (f_{j-1} - o.l.e_{j-1}) - A_{j-1} \quad (\text{iii})$$

Clearly the fulfilment of the condition represented by (iii) is rendered less likely because a company qualifies for a tax relief equal to $(f_{j-1} - o.l.e_{j-1})$ rather than p_{j-1} .

To conclude this sub-section on taxation, mention should also be made of a pair of matters concerned with the advance corporation tax, $D_j \hat{T}_j / 1 - \hat{T}_j$, payable by a company on the distribution of a dividend, D_j , to its shareholders.⁸

As is well-known, advance corporation tax payments are deductible from the total corporation tax charge on the company and simultaneously imputable to shareholders as a tax credit (or anticipatory payment to the tax collector on their behalf). The impact of possible dividends and advance corporation tax on (i) is illustrated in (iv) below:

$$n_j - A_j - \{T_{j-1}[e_{j-1} - (f_{j-1} - o.l.e_{j-1}) - A_{j-1}] - D_j \hat{T}_j / 1 - \hat{T}_j\} - D_j / 1 - \hat{T}_j + G_j \geq 0 \quad (\text{iv})$$

Apart from the advance corporation tax, $D_j \hat{T}_j / 1 - \hat{T}_j$, and dividend, D_j , paid in year j , (iv) also illustrates that the year j 'mainstream' tax payment shown within the $\{ \}$ brackets is a function of year $j-1$'s 'total' corporation tax charge on the company *minus* the advance corporation tax actually *paid* in year j on the distribution of a dividend D_j declared in year $j-1$.

The second matter which should be emphasised concerns the legal restriction on the amount of advance corporation tax which may be deducted in an individual year j from the 'total' corporation tax *charge* on a company. The general rule is, in effect, that the mainstream tax charge on a company should be no less than an amount arrived at by multiplying (assessable profits for tax purposes *minus* tax deductible items) at a rate equal to the difference between the nominal rate of corporation tax, T_j , and the basic rate of income tax, $\hat{T}_j$. In symbolic terms this restriction is:

$$T_j[e_j - (f_j - o.l.e_j) - A_j] - D_{j+1} \hat{T}_{j+1} / 1 - \hat{T}_{j+1} \geq (T_j - \hat{T}_j)[e_j - (f_j - o.l.e_j) - A_j] \quad (\text{v})$$

or

$$D_{j+1} / 1 - \hat{T}_{j+1} \leq e_j - (f_j - o.l.e_j) - A_j \quad (\text{vi})$$

The last relation says that in an individual year j the advance corporation tax 'set-off' restriction will be satisfied provided the dividends paid to shareholders plus advance corporation tax, ie, the 'gross' dividend, is no greater than assessable profits for tax purposes *minus* tax deductible items.

II.iv. Debt-financing

For present purposes it is sufficient to note that geared companies generally, but not always, provide tax advantages for their shareholders and that, even in a no-tax world, a geared company may sell at a higher value than an ungeared, but otherwise identical, counterpart. Even in the absence of tax advantages and beliefs about other effects on a company's average cost of capital, medium and long-term debt-financing instruments would doubtless be a permanent feature of money and capital markets.

Notwithstanding the 'base stock' nature of much bank overdraft financing, and the use of the latter to maintain target total debt ratios between (say) triennial visits to the capital market, it is entirely unlikely that bank overdrafts could ever be replaced by some form of equity financing. In short, the differentiation in Figure 1 between medium and long term debt-financing on the one hand and 'genuine' short-term financing on the other is both observable and necessary because it takes cognisance of two basically different kinds of services provided by financiers. The one role is concerned with the financial implications of a particular (viable) scale of trading and productive capacity whereas the other is primarily concerned to ensure a dove-tailing of the in- and out-flows of cash in relation to that scale of trading and productive capacity.

Whatever the rationale of debt-financing *per se*, it will always raise considerations from a financial performance measurement standpoint since interest and debt retirement schedules constitute costs which ultimately need to be taken into account as such in measuring corporate proprietorship income.

The financial relationship subsisting between banks and other lenders on the one hand and companies on the other is of course *par excellence* an example of the arithmetic of the investment decision. Thus, a banker obtains a (risk-compensating) rate of interest (variable or otherwise), r_i , which is provided by a stream of interest payments, F_j , and capital repayments $+ M_j$ in return for the amounts advanced, $-M_j$. Stated

⁷ i_j and l_j represent periodic credit taken and given respectively.

⁸The symbol $\hat{T}_j$ represents the basic rate of income tax which is currently 35%.

in terms of an equivalent annual rate of interest (and ignoring taxes) the banker's investment criterion is basically:

$$\sum_{k=0}^m \frac{F_k^1 \pm M_k}{(1 + r_i)^k} = 0 \quad (\text{vii})$$

In the event of a continuing relationship between a bank and company, (vii) need only be changed to (viii) in order to reflect its principal features from an illustrative standpoint.

$$\sum_{k=j}^{j+n} \frac{F_k^1 \pm M_k}{(1 + r_i)^{k-j}} = 0 \quad (\text{viii})$$

The corresponding continuing relationship between other lenders and a company can clearly be represented by (ix).

$$\sum_{k=j}^{j+n} \frac{F_k^{11} \pm M_k}{(1 + r_i)^{k-j}} = 0 \quad (\text{ix})$$

In concluding this sub-section it is perhaps worth emphasising that once the (risk-compensating) rate of interest on debt-financing together with the time-profile of the debt retirement payments has been negotiated, the financial relationship between borrower and lender is essentially the cash flow relationship described by the numerators of (viii) and (ix).

II.v. Equity financing

Equity finance is generated internally in any period j in which the value of inequality (iv) is positive. It should be noted, as is elaborated in Section III, that this proposition differs from the usual notion of internally generated finance. The conventional notion fails to allow for working capital, p_j , which effectively may be pre-empted from conventionally measured profit as a consequence, in period j , either of physical increases in trading and productive activity and/or because of cost and price increases.

The reinvestment of internally generated equity finance as a substitute for external equity is justified by the presence of transactions and/or other costs. External equity financing is itself only justified if, viewing a 'start-up' as opposed to ongoing situation from the standpoint of a continuing chain of shareholders, criterion (x) is satisfied. It should be noted that (x) takes account of the tax credit, $D_j \hat{T}_j / 1 - \hat{T}_j$, imputed to shareholders at their basic rate of tax $\hat{T}_j$ on the payment of a dividend D_j . (The B_j in the

numerator of (x) represents external equity provided by shareholders, $-B_j$, or equity capital repaid thereto, $+B_j$).

$$\sum_{j=0}^{\infty} \frac{D_j / 1 - \hat{T}_j \pm B_j}{(1 + r_e)^j} \geq 0 \quad (\text{x})$$

The use of (x) as an investment criterion by shareholders not only presupposes the manner in which they specify the arithmetic structure of their investment decisions; it also assumes that they possess knowledge, or entertain beliefs, about both the size and risk characteristics (the latter being embodied in their capitalisation rate, r_e) of their future cash flow stream.

Not only can (x) be represented as an investment criterion, it may also be regarded as a shareholder valuation model. A modification is however necessary for the ongoing situation.⁹ For example, immediately after its formation, necessitating initial outlays of B_0 , a company's promoters would value a company at V_0 given by:

$$V_0 = \sum_{j=0}^{\infty} \frac{D_j / 1 - \hat{T}_j \pm B_j + B_0}{(1 + r_e)^j} \quad (\text{xi})$$

Assuming the market shares all the expectations of the company's promoters, it will also value the company at V_0 after the initial outlays B_0 . More generally this is merely another way of saying that the market value of a company's equity shares is given by the present value of all future equity cash flows.

The relevance of this type of theory in an *ex post* profit measurement context can usefully be elaborated by reference to the decision of an investor to acquire shares for a single period. His return is thus defined by (xii).

$$\frac{D_1 / 1 - \hat{T}_1 \pm B_1 + V_1}{1 + r_e} - V_0 \quad (\text{xii})^{10}$$

The return (defined by xii) constitutes a completely objective statement of the financial relationship subsisting between a company and its shareholders

⁹Modifications (similar to those outlined hereafter) to (viii) and (ix) are also necessary to accommodate the ongoing situation.

¹⁰In an efficient market, the value of (xii) will tend to zero since the capitalisation rate, r_e , represents a return on V_0 commensurate with the risk class of the equity investment in question. Were (xii) to take on a positive value, the investment would offer a premium over and above the commensurate return for risk. But such a premium would quickly be eliminated by the arbitrage transactions thereby caused.

and is exactly analagous to (viii) and (ix). To remunerate his investment at the entry price, V_0 , the shareholder obtains a return residing in a gross dividend, $D_1/1 - \hat{T}_1$, an additional contribution (or drawings) $\pm B_1$, and an exit share price, V_1 .

Whilst (xii) provides the means for revealing the exact *ex post* return enjoyed by shareholders it obviously does not describe the precise expectations of the market which in turn lead to the formation of share prices. It does, however, focus attention on the sequence, namely, distributable equity cash flows, including (implicitly) the determinants thereof (and the relationship of the latter to each other as described in II.vi. (below)), which constitute the '... data most suitable for giving guidance to this complex capitalisation process ...'.¹¹ The index represented by (xii) thus focuses on the intrinsic nature of both *ex post* and *ex ante* financial performance with all that this implies for *detailed* disclosure in published company accounts and, more pertinently in the present context, the financial statements which should be required by financiers and shareholders when invited to subscribe new capital.

II.vi. Summary of section II

To arrive at a notion of profit from a 'finance' or fund-raising standpoint it is merely necessary to link the financial relationships subsisting between creditors, bankers, tax collectors and shareholders respectively on the one hand, to the company as a trading entity on the other. In effect this amounts to the adjustment of inequality (iv) to accommodate external financing and liquidity changes. The total cash flow model for any year j which then emerges is given by (xiii).

$$\begin{aligned} n_j - A_j - F_j - \{T_{j-1}[e_{j-1} - (f_{j-1} - 0.1e_{j-1}) \\ - A_{j-1} - F_{j-1} - R_{j-1}] - \hat{T}_j D_j / 1 - \hat{T}_j\} \\ - R_j + G_j \pm M_j \pm N_j \pm B_j \\ = D_j / 1 - \hat{T}_j \end{aligned} \quad (xiii)^{12}$$

Subject to the conditions, represented by (v), (viii) and (ix), which need to be complied with by a company vis à vis tax collectors, bankers, and other lenders respectively, a profit-maximising company is, given the risk and debt policies of which the

shareholders' capitalisation rate is assumed to be a function, thus one which attempts to maximise the value of (x).

From a fund-raising standpoint the foregoing analysis amounts to no more than the financial arithmetic which should be used to determine *ex ante* the respective amounts, in money terms, which can be paid out to the providers of funds given all the assumptions which underlie a multiperiod corporate financial plan. It can alternatively be described as an *ex post* total cash flow statement which, given the level of investment, and conditions (v), (viii) and (ix), shows the determinants of the equity cash flow stream generated by a company.

III. Cash-flow arithmetic versus accruals arithmetic

Cash flow analysis is still not widely perceived to be logically implicit in a profit concept relevant to fund-raising. Corporate financial management continues to be replete with examples of companies which cast their profit-making objectives and plans within the conventional accruals accounting framework. A satisfactory combination of (conventional) profit level and feasible plans having been arrived at, any 'financing' shortfall is then obtained on the strength of the projected conventional profit number.¹³ As the ensuing paragraphs attempt to show, the use of expected profits (computed on an accruals basis) as an index of capital servicing and debt retirement capacity is objectionable in both theory and practice.

To amplify these assertions it is useful to specify the conventional method of accounting and to juxtapose it with the cash flow model represented by (xiii).

In any year j profit, E_j , measured on an accruals basis is given by:

$$E_j = e_j - L_j - F_j - t_{j+1} \quad (xiv)^{14}$$

where,

$$e_j = d_j - (a_{j-1} + b_j - a_j), \quad (xv)^{14}$$

¹³This is clearly a testable proposition. Empirical work on a project concerned with finance for investment, in which the writers participated one year ago, provides further evidence of this phenomenon. Moreover, the accruals method of accounting also appears, at least until comparatively recently, to have enjoyed extensive use in banking and merchant banking circles as a basis for debt servicing and debt retirement calculations. Further examples include the accounting basis of dividend payments directed by tax inspectors in the case of close companies and the profit records included in company prospectuses.

¹⁴The symbols L_j , d_j and b_j represent depreciation, sales invoiced, and invoiced revenue costs respectively in period j . Opening and closing inventories are represented by a_{j-1} , and a_j respectively.

¹¹See reference (9), page II et seq.

¹²Equation (xiii) also assumes that both replacement capital expenditure, A_j , and growth capital expenditure, R_j , are fully tax deductible in the year incurred. To the extent that this assumption does not hold, or that the existing asset stock contains assets which continue to be eligible for annual (tax) allowances, equation (xiii) can be adjusted accordingly.

$$L_j = \text{func.}[\Sigma(A_j + R_j - G_j)] \\ (j = 1, 0, -1, -2, \dots) \quad (\text{xvi})$$

and,

$$t_{j+1} = T_j[e_j - (f_j - 0.1e_j) - A_j - F_j - R_j] \quad (\text{xvii})$$

The focal points of a juxtaposition of (xiii) with (xiv) are represented by comparisons of operating cash flow, n_j , with pre-depreciation profit, e_j , on the one hand and of replacement investment, A_j , with historic cost-based depreciation, L_j , on the other.¹⁵

The difference between e_j and n_j can be expressed as follows:¹⁶

$$\begin{aligned} e_j - n_j &= p_j = [d_j - (a_{j-1} + b_j - a_j)] - (k_j - h_j) \\ &= (d_j - k_j) + (a_j - a_{j-1}) - (b_j - h_j) \\ &= (l_j + f_j) - i_j \quad (\text{ii}) \\ &= \text{periodic (change in debtors + inventory} \\ &\quad \text{change - change in creditors)} \\ &= \text{periodic (change in current assets - change} \\ &\quad \text{in current liabilities)} \\ &= \text{periodic working capital investment.} \end{aligned}$$

Similarly (and ignoring taxes as above) total working capital investment, Σp_j , is given by:

$$\begin{aligned} \Sigma p_j &= \Sigma(l_j + f_j - i_j) \\ &= m_j + a_j - j_j \quad (\text{xviii}) \end{aligned}$$

that is, total trade debtors *plus* total inventory investment *minus* total trade creditors.

Assuming accruals accounting arithmetic enjoys widespread use in the fund-raising context, the question of whether p_j will generally take on significant positive or negative values is evidently a matter of paramount importance. If p_j is generally positive, e_j overstates the cover for fund servicing and debt retirement and vice versa.

As an examination of (ii) and Illustrations II to VI suggests, p_j will generally take on positive values in conditions of rising costs and/or growth – given (a) the period credit allowed to, and taken from, customers and suppliers respectively, and (b) the (almost) universal use of the FIFO method of inventory valuation in practice. Since conditions of growth and/or rising costs are endemic in modern economies, there are strong pragmatic reasons for suggesting that the accruals method of accounting will, as elsewhere, be highly inaccurate as a basis for fund-raising calculations. Support for this proposition is provided by Illustration I, below, which shows the aggregate financial performance of the company sector of the economy for the period 1968–1974 in both accruals and cash flow terms.

The significance of periodic working capital investments, p_j , in recent years, and therefore the

degree of error that might have been introduced by adopting accruals accounting arithmetic as the basis of fund raising calculations, can be highlighted by calculating the interest cover and debt redemption capacities on accruals and cash flow bases respectively using the figures in Illustration I.

Applying the accruals method of accounting the cover for interest payments would, as in practice, be calculated from $(e_j - L_j)/F_j$ whereas debt redemption capacity might be defined as: $e_j - L_j - F_j - t_j$. On a cash flow basis the corresponding magnitudes are: $(n_j - A_j)/F_j$ and $n_j - A_j - F_j - t_{j-1}$. Applying these criteria to the data shown in Illustration I, the results shown in Table 1 emerge. The factors shown in columns (5) and (6) which, in effect, reflect the extent to which the accruals method of accounting has overstated debt-servicing and debt redemption capacities can only be described as enormous.

IV. The cost of working capital

At the very least cash flow analysis does take cognisance of the incidence of working capital investment. Other things apart, the discussion in the previous section raises the presumption that by examining the implicit cost of working capital, and the failure of the accruals method of accounting to give effect thereto, it is possible to adduce sound theoretical arguments (starting from the accruals accounting perspective) in support of a cash flow concept of profit for general purposes. In considering this possibility the constituents of working capital are first examined in turn.

IV.i. Inventories

As Illustrations II to VI inclusive indicate, the FIFO accounting treatment of inventories effectively eliminates all inventory accumulation (expressed in money terms) from the accruals-based operating statement. This value is held in suspense until such time as inventory values (in money terms) are actually reduced. Consequently, and especially in the case of FIFO-valued inventories, there is a hard core of long term investment which will only be treated as a cost if and when inventories are actually run down to zero. Referring to Illustration VI, assume that in 1975 the closing inventory stands, not at 110 units valued at £210, but at zero units because periodic sales amounted to 1,210 units invoiced at: £2,836 + £284 = £3,120. The cost of these 1,210 units sold would be stated in accruals accounting terms as:

	£
cost of 1,100 units produced	2,739
cost of 110 units of inventory	150
total cost of sales in 1975	£2,889

¹⁵The depreciation problem is considered in Section IV below.

¹⁶See Illustrations II to VI below.

year	accruals basis		cash flow basis		(1) ÷ (3)	(2) ÷ (4)
	$(e_j - L_j) \div F_j$	$e_j - L_j - F_j - t_j$	$(n_j - A_j) \div F_j$	$n_j - A_j - F_j - t_j - 1$		
	(1)	(2)	(3)	(4)	(5)	(6)
	£m		£m			
1968	2.59	3,423	1.47	1,908	1.76	1.79
1969	2.09	2,987	1.16	1,822	1.80	1.64
1970	1.92	3,015	1.19	1,691	1.61	1.78
1971	2.03	3,756	1.26	2,156	1.61	1.74
1972	2.07	4,416	1.02	2,218	2.03	1.99
1973	1.98	6,712	0.62	2,633	3.19	2.55

Notes

(i) Company sector depreciation provisions, L_j , are estimated by expressing those given in references (1) and (5) as percentages of the respective pre-depreciation profits to which they relate. These percentages are then applied to *total* company pre-depreciation profit, ie, to the first line of Illustration I below.

(ii) Replacement investment is estimated from a theoretical model which relates accounting depreciation provisions to replacement investment expressed in terms of periodic purchasing power. The basis of this model is described in reference (6) page 52 et seq. The underlying principle is discussed in Section IV.iii. below.

TABLE 1
Debt-servicing and debt-redemption cover

However, the inventory cost of £150 is the sum of £75, £32 and £43 which amounts have been incurred in 1972, 1973 and 1974 respectively. Thus, in terms of *periodic purchasing power* the transaction is:

year	1972	1973	1974	1975
inventory investment	£75	£32	£43	—
and not	—	—	—	£150

The accruals method of accounting not only holds the cumulative sequence of inventory investments in suspense until 1975, it patently understates them in terms of the purchasing power of that year — the year in which the complete set of inventory transactions is finally to be accounted for. As is elaborated later, the extent of this understatement depends upon a firm's weighted average cost of capital.¹⁷ Assuming the latter is 15% per annum, the full cost of the inventory investment in 1975 is: $£75 (1.15)^3 + £32$

$(1.15)^2 + £43 (1.15) = £206$, and is therefore understated by an amount equal to $£206 - £150 = £56$, ie, by an amount representing 37% of what is actually treated as a cost. Moreover, inventories may never be run down, are therefore held permanently in suspense, and thus neither charged against profits like any other asset via a depreciation policy, nor treated as a cost in any other way. But, it may be argued, inventories do not generally depreciate like any other asset and, to the extent that their realisable value declines either because of physical deterioration or otherwise, such depreciation can legitimately be charged to the profit and loss account.

The fact that an inventory does not generally depreciate in a technical sense like any other asset and, at the limit, may have an infinite life, emphatically does not mean that a particular level of inventory investment can be maintained at zero cost in terms of current purchasing power. Thus, the full cost of an inventory acquired at the end of period 0 at a price f_0 and which is to be held *ad infinitum*, is, in terms of the purchasing power of the date of acquisition, f_0 .

To amortise an amount f_0 over an infinite period of time, it is necessary to charge annually an amount equal to the value of x satisfying equation (xix) in

¹⁷The correct method of accounting for the weighted average cost of capital is not affected by the cleavage between the Modigliani-Miller and 'modern traditionalist' theories of business finance, and most certainly not exemplified by the CPP procedure for handling money gains.

which r represents the weighted average cost of capital.

$$f_0 = \frac{x}{1+r} + \frac{x}{(1+r)^2} + \dots \text{ad inf.}, \quad (\text{xix})$$

whence, $x = f_0 r$.

Note that this infinite series of depreciation charges $x, x, \dots$, given by $x = f_0 r$, has a present value equal to f_0 . In other words, the acquisition cost of an inventory investment of f_0 paid at the end of period 0 must be regarded as being formally equivalent, economically speaking, to the charging of an infinite series of periodic costs each of which is equal to $f_0 r$. Alternative, but economically equivalent, accounting policies for this inventory investment would therefore be represented by the charging of all of f_0 to period 1 on the one hand; or by the charging of $f_0 r$ each year in perpetuity on the other.

Similarly, in giving effect to the cost of *periodic* inventory investment, f_1 , taking place by (or at) the end of period 1, either of the same two (economically equivalent) accounting policies can be adopted. Either the *whole* of the periodic inventory increase, f_1 , (or decrease for that matter) can be accounted for in the period in which it takes place (period 1) or, alternatively, a periodic inventory charge equal to $f_1 r$ could be made *ad infinitum* commencing at the end of period 2. Likewise, the inventory adjustment, f_2 , could be wholly accounted for in period 2; or by an infinite series of charges equal to $f_2 r$ commencing at the end of period 3. The two *alternative* accounting policies for coping with the totality of inventory transactions *ad infinitum* are shown in Table 2.

If the *general* level of prices is changing at some rate, s_j , which is in some degree embodied in the weighted average cost of capital, the latter cannot be assumed to be constant. Furthermore, the other

constituent elements of the cost of capital may also not be constant. Hence, to amortise a_0 over an infinite period of time, the sequence of charges would need to be:

$$a_0 r_1, a_0 r_2, a_0 r_3, \dots \text{ad inf.}$$

After adjusting for periodic inventory changes, the sequence of annual charges becomes:

$$a_0 r_1, a_1 r_2, a_2 r_3, \dots \text{ad inf.}$$

In short, the approach inherent in the second of these two accounting policy alternatives raises precisely the category of problems faced by financiers and shareholders when attempting to quantify their respective capitalisation rates.¹⁸ A much simpler, and completely objective, way of giving effect to the full cost of a sequence of periodic inventory investments (including the initial build up), which are not only costs in the economic sense of the word, but costs also constituting a *preferential* charge in the allocation of the 'accruals-based' earnings of a going concern between creditors and shareholders, is the adoption of the first of the two alternative accounting policies described above.

As regards the distinction between periodic inventory investment resulting from a physical increase in inventories and 'stock appreciation' caused simply by increases on the cost side, the British Chancellor of the Exchequer, in introducing the tax relief in respect of inventory appreciation in his Autumn 1974 budget, seems to have taken the view that 'money' appreciation ought to be an allowable tax deduction whereas 'physical' increases should not. If, as the

¹⁸The quantification of the cost of capital on a periodic basis for *ex post* financial performance measurement purposes clearly constitutes a much less acute problem than the quantification problem in the multiperiod fund-raising context.

period	1	2	3	4 ... ad inf.
FIRST POLICY	$f_0 + f_1$	f_2	f_3	$f_4 \dots \text{ad inf.}$
OR	$f_0 r$	$f_0 r$	$f_0 r$	$f_0 r \dots \text{ad inf.}$
plus		$f_1 r$	$f_1 r$	$f_1 r \dots \text{ad inf.}$
plus			$f_2 r$	$f_2 r \dots \text{ad inf.}$
plus				$f_3 r \dots \text{ad inf.}$
etc., ad inf.				
*SECOND POLICY	$a_0 r$	$a_1 r$	$a_2 r$	$a_3 r \dots \text{ad inf.}$
* $\sum f_j = a_j$ (see equation (xviii))				

TABLE 2
The cost of inventory investment

writers believe, there is an overriding case for accounting for the full cost of an investment in terms of the purchasing power of the period in which it is acquired, the distinction between 'physical' and 'money' stock appreciation is quite bogus. Both species of stock appreciation have exactly the same financial impact on a business organisation and, so long as money is used as a unit of account and medium of exchange, ought to be given parity of treatment in both financial performance measurement (*ex post* and *ex ante*) and assessment of taxes.

IV.ii. Periodic credit given and taken

The substance of the foregoing paragraphs is that the conventional accruals method of accounting first isolates periodic inventory investments from the operating statement and subsequently only partially accounts for inventory cost if, and only if, inventories are actually run down *in money terms*. To the extent that periodic inventory investments are financed by suppliers via periodic credit taken, the periodic cost of inventory is reduced accordingly (or, conceivably, though perhaps unlikely, more than offset). Credit taken has the character of an inventory investment decision in reverse and, if the cost of inventory investment is to be accounted for within the accruals accounting framework in either of the ways set out above, ie, by charging $(f_0 + f_1), f_2, f_3, \dots$ ad inf., or $a_0r_1, a_1r_2, a_2r_3, \dots$ ad inf., the value of credit taken must be allowed for in like manner, that is, by including $i_1, i_2, i_3, \dots$ ad inf., or $j_1r_2, j_2r_3, j_3r_4, \dots$ ad inf., as a periodic income stream to give effect to *net* periodic inventory investment.

Similarly, to give effect to the cost of the sequence of periodic investments in customers in the form of credit given, either of two economically equivalent accounting policies can be adopted. *Either* $l_1, l_2, l_3, \dots$ ad inf., or $m_1r_2, m_2r_3, m_3r_4, \dots$ ad inf., should be accounted for as costs.

To account for the net cost of the three components of working capital simultaneously, it is obviously only necessary to take either the algebraic sum of the three *periodic* constituents or to calculate interest at a rate, r_j , (corresponding to the periodic cost of capital) on total working capital investment, q_j . Again, making use of the symbols in Illustration II to VI (inclusive), these alternative accounting policies for periods 1, 2, 3, ... ad inf., are:

either

$$(p_0 + p_1), p_2, p_3, \dots \text{ ad inf.,}$$

or

$$q_1r_2, q_2r_3, q_3r_4, \dots \text{ ad inf.}$$

In the interests of objectivity the first of these two policies is preferable. Purely from a computational

standpoint no purpose is served in attempting to resolve the difficulties which characterise the quantification of a sequence of periodic costs of capital in order to amortise a known amount of periodic working capital investment when those difficulties can be obviated without sacrificing any theoretical rigour whatsoever. Note also that if the second alternative is adopted in conjunction with the depreciation policy described in IV.iii (see below) a little care is necessary to ensure that debt interest is not double-counted in the profit and loss account.

It is perhaps important to remind the reader that what is being advocated is an adjustment to the *accruals* method of accounting in order to allow for the *cost* of working capital. The method preferred here for applying this corrective, namely, by means of a periodic working capital charge (which in theory could be negative or positive)¹⁹ will, as already explained,²⁰ convert the conventional measure of pre-depreciation profit into a pure cash flow number.

The latter result has a number of significant implications. These are considered further after referring to the second focal point in a juxtaposition of the accruals and cash flow accounting methods, namely, the extent to which historic cost-based depreciation policies, which are still in almost universal use in the UK, understate the full cost of an asset in terms of current purchasing power.

IV.iii. Depreciation and replacement investment

Despite the many attempts that have been made to devise depreciation policies which, especially in periods of inflation, will effectively amortise the full cost of an asset there is, as yet, no universal agreement, certainly none among the world's accountancy bodies, on a method which would achieve the desired end-result. Thus, notwithstanding the Sandilands prescription, differences of opinion on whether depreciation charges should be based upon adjusted acquisition cost or upon replacement cost, and on the impact of technological advance, still persist.

There exists a much simpler and more theoretically satisfying solution to the depreciation problem than the one proposed in the Sandilands report. It is based upon identically the same reasoning as that from which the cost of working capital is derived above. The full cost of an asset to an organisation is equal to the price paid for it when acquired. Such a measure of cost is essentially relative to the purchasing power of money at the time the acquisition

¹⁹The sign of the corrective makes no difference to the reasoning, which is symmetrical.

²⁰See equation (ii) above.

took place. Hence to reflect this cost, each of a sequence of (say) equal annual depreciation charges must have a value of C which satisfies equation (xx).

$$A_0 = C \left[\frac{1 - (1+r)^{-w}}{r} \right] \quad (\text{xx})$$

where: A_0 is the acquisition cost of an asset at the end of year 0; r is the weighted average cost of capital to the acquirer; and w is the asset life in years. Calculated on a fixed instalment historic basis, the conventional depreciation charge would amount to A_0/w . The extent to which the latter understates C can be estimated by making reasonable assumptions about the values of r and w respectively. As Illustrations VII and VIII clearly indicate, even for modest values of r and w the extent to which A_0/w understates C is very serious.

One drawback to this kind of approach is, of course, that it relies on estimates of w and, as with the second alternative treatment of the cost of working capital, of r too. But since the capital cost, A_0 , is economically equivalent to a series of charges, each of which is equal to C , and made at the end of years 1, 2 . . . , w , respectively, the need for estimates of r and w can be completely obviated by charging A_0 to period 1. Whilst the conventional (accounting) wisdom suggests objections²¹ to this prescription, none of them amounts to a negation of the proposition that the most accurate way of accounting for the full cost of an asset, in terms of the purchasing power of the period in which it was acquired, is to charge its total cost to the acquisition period alone.

From the viewpoint of *periodic* performance measurement a more difficult problem which *prima facie* does need to be settled (if all capital expenditure is to be treated as a cost in the period in which it is paid) is the allocation of that cost between replacement, A_j , and growth expenditure, R_j . Though this distinction appears to be deep-rooted in accounting practice, neither its significance nor theoretical underpinning are really made explicit. Replacement expenditure apparently corresponds to investment for the renewal or restoration of components of the (tangible) existing trading and productive asset stock and will by implication maintain earning-capacity intact. On the other hand growth investment is, roughly speaking, concerned with the creation of *additional* trading and productive capacity.

Whereas it is perhaps tempting to assume that, aside from some little latitude over timing, replacement investment decisions are outside managerial discretion (and therefore a clear cost 'above the line'

in the calculation of periodic earnings) growth investment represents a 'policy' decision. Thus, to the extent that growth is internally-financed, management has simply exercised its discretion in a particular way over the total fund available for allocation between dividends and reinvestment.

In fact the distinction between replacement and growth investment is by no means, if at all, as clear-cut as is often assumed and, in relation to the profit-maximising criterion already proposed (equation (x)), is at best irrelevant and potentially misleading. Whilst there may, in any given situation, be some level of sequential investment, having all the superficial aspects of replacement expenditure and which will support a *perpetual* stream of net equity cash flows, there is also the possibility that that same business would have generated a *finite* stream of equity cash flows of higher present value as a consequence of a *lower* level of sequential investment. Alternatively, a higher level of investment embracing both 'replacement' and 'growth' may have been the best strategy.

In the long run, ie, in the typical funding context, it might be supposed that the distinction between replacement and growth investment would be seen as an obvious irrelevance. Regardless of whether periodic investment is inter-temporally dependent or not, all investment satisfying the present value rule in the sense just mentioned is 'necessary' and, like any other cost (including any such investment as does not satisfy that rule), should be accounted for *ex post* and/or *ex ante* in terms of periodic purchasing power.

In practice things are perceived somewhat differently. Growth investment itself (as opposed to the replacement of components of the existing asset stock) tends to be viewed incrementally and ongoing operations are widely seen as the interest cover and debt retirement capacity not only for debt finance already in issue, but also for any new debt finance contemplated. A realistic, though perhaps not perfectly satisfactory, differentiation between replacement and growth investment (over a period corresponding to the duration of the next tranche of debt) separates the investment necessary to support the debt-servicing and debt-retirement capacity from that which is discretionary, ie, differentiates claims upon, from the allocations of, operating cash flow. Such a differentiation may therefore give a useful practical guide to financiers in assessing the risks inherent in the financing of new investment including the extent to which finance ostensibly raised for the latter may in future periods suddenly become pre-empted to pay for replacements.

²¹These are discussed in some detail in reference (6). See page 9 et seq.

Since, on very reasonable assumptions, historic cost-based depreciation will, even in a *growth* situation, ie, calculated on $\Sigma(A_j + R_j)$, represent a conservative proxy for periodic *replacement* capital expenditure alone,²² the use of the conventional accruals accounting framework in the fund-raising context would seem to necessitate one of at least two alternative correctives for dealing realistically with the depreciation problem. Either the expected total capital investment should be included in financial statements as a cost, differentiating, for reasons just mentioned, as realistically as possible between A_j and R_j ; or, total investment, $A_j + R_j$, should be depreciated with a charge based on equation (xx).

The choice of the former alternative, coupled with the preferred alternative for dealing with the cost of working capital, converts the conventional post-depreciation profit into a cash flow measure of periodic earnings (net of interest). If the two correctives to the conventional profit and loss account are themselves defensible, then, aside from other defects which that account may have, it follows that the measurement of periodic financial performance on a cash flow basis is itself economically defensible.²³

V. Wider implications of the cash flow concept of profit and conclusions

A noteworthy consequence of the cash flow earnings basis emerging from the application of the two above-described correctives to *ex post* accruals accounting statements is worthy of emphasis. Not only do the two correctives themselves help to give effect to the full cost of both working and other capital investments in terms of periodic purchasing power, the 'corrected' cash flow computation constitutes a statement of *all* transactions in terms of periodic purchasing power. This means, therefore, that *ex post* relative price changes are automatically captured by cash flow accounting in terms of the purchasing power of each individual period, ie, relative price changes are automatically captured in money terms. Hence, having first expressed relative price changes in money terms, periodic *earnings* represented by operating cash flow, n_j , minus²⁴ total investment, $A_j + R_j$, can readily be converted into real terms (taking any desired base year) by the

application of an index measuring the rise in the *general* level of prices.

This is not to contend that published or management accounts should necessarily be disclosed in terms of a base-year price level. Indeed it is arguable that all managerial and external investor decisions can be based upon periodic purchasing power, ie, accounts expressed in money terms embodying actual and/or expected relative price changes. In fact, in the fund-raising context any attempt to allow fully for both the impact of inflation and relative price changes that is simultaneously directed to the forecasting of funding requirements, in the money values of the periods in which funds are to be sought, necessarily implies total cash flow forecasts in money terms. If, finally, fund-raising is explicitly recognised as an integral part of capital budgeting, corporate financial planning and financial control, the administrative convenience of forecasting, planning and monitoring in money terms can be taken for granted.

A further implication of the cash flow basis of measuring financial performance which results from the above-described adjustments to the conventional profit and loss statement is as follows: as already implied, after being 'corrected' in respect of periodic working capital changes and the 'depreciation shortfall', the conventional statement gives a measure of the periodic earnings (net of interest). As has already been seen, the complete conversion into a one-year profile of the total cash flow or multiperiod capital budgeting model represented by equation (iv), necessitates further adjustments for interest payments, F_j , external debt financing, N_j , external equity financing, B_j , and liquidity changes, M_j . In other words, aside from the working capital and depreciation correctives, the conventional profit model fails to allow for the effects of the timing and amounts of debt and external equity capital (raised and redeemed) as well as the impact of liquidity changes on the shareholders dividend stream. Since, in theory at least, the equity value, V_e , of a going concern is in the deterministic case given by (x) the difference between equity valuation on the basis of the capital budgeting model on the one hand and the conventional accounting model on the other is therefore:

$$\sum_{j=1}^w \{ [(e_j - L_j - F_j - t_{j+1}) - (n_j - A_j - F_j - t_j - R_j + G_j \pm N_j \pm B_j \pm M_j)] (1 + r_e)^{-j} \} \quad (\text{xxi})$$

$$= \sum_{j=1}^w \{ [(e_j - n_j) + (A_j + R_j - G_j - L_j) + (t_j - t_{j+1}) \pm N_j \pm B_j \pm M_j] (1 + r_e)^{-j} \}$$

²²See reference (6), pages 52-55.

²³Whilst one of the writers has, for some years, argued this proposition in a number of papers on cash flow accounting (see for example (8)), the campaign has also recently been resumed by Merrett and Sykes (see (9)).

²⁴Also minus taxes and interest payments as the case may be.

= present value, discounting at the cost of equity capital, of [total working capital invested²⁵ plus the total depreciation shortfall minus total long and short term finance raised plus total long and short term finance repaid]. In other words, in addition to the cost of working capital, and the depreciation shortfall on total investment, the time-profile of external financing flows (excluding interest payments) contributes to the gap between the accruals accounting profit concept and the concept of profit necessary for fund raising.

The time-profile of external debt financing flows generally represents a negative determinant of the cost of debt in addition to the positive determinant in the form of interest payments themselves. The omission of this negative element from the accruals accounting model raises a number of technical points which are dealt with elsewhere. The neglect of the time-profile of external financing flows provides further support for the view that the theoretical underpinning of the accruals basis of accounting is deficient.

The failure to deal with working capital and the 'depreciation shortfall' leads to very serious omissions from the cost side of income calculations no matter how a company is financed. These omissions²⁶ may have a very broad impact in practice for, not only do they cause aggregate business profits to be overstated but, as elaborated below, doubtless distort interfirm comparisons and taxable capacity, as well as the *distribution* of the profits tax burden on the business sector of the economy.

In that accruals-based accounting statements represent the principal framework to which fund-raising arithmetic is in practice related, and from which fund-servicing and debt-retirement capacities are generally derived, the implications for resource allocation give at least two main grounds for concern.

In the first place there is the possibility of the misallocation of limited funds as between potentially profitable capital-consuming competitors because the cost omissions constituted by working capital costs and the depreciation shortfall do not have proportionately the same effect on all companies' income calculations. As already elaborated, the determinants of periodic working capital investment are relative price change, growth and conditions of trade credit which are likely to have different parameter values from one company to the next. Similarly,

all companies are not equally capital-intensive nor subject to the same rate of technological advance and are thus affected to a differing extent by the 'depreciation shortfall'.

Perhaps much more serious is the possibility that in an economy which suffers high rates of inflation, accruals-based accounting statements are more prone to mask the distinction between potential profits and losses and that financiers will inject funds into enterprises which are not worthwhile from an economic standpoint. The higher the rate of inflation and the weaker the controls on money supply, the more acute and observable this danger is likely to become. To the extent that conventional financial performance criteria actually influence the capital market allocation process in this way, it might be presumed that the neglect of working capital acts as a bias in the price mechanism, ie, a bias which conceivably works in favour of (working) capital-intensive companies in the allocation process and, as has undoubtedly happened in the UK, may result in continued injections of cash from a 'misled' banking system into individual companies long after they have ceased to be viable in a realistic sense. Though it may never be known by how much, and for how long, the UK banking mechanism facilitated the cross-subsidisation of the unprofitable part of the business sector, the amounts involved must be considerable by any standard.

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²⁵Including tax liabilities.

²⁶This does not of course apply to the 100% tax depreciation allowance for which investment may qualify.

ILLUSTRATION I

Financial performance of UK companies 1968-1974

Sources: References (1), (2), (3), (4), and (5).

	1968	1969	1970	1971	1972	1973	1974*	1974*	1974*	1974*	Total
	£m	£m	£m	£m	£m	£m	(1)	(2)	(3)	(4)	£m
UK gross trading profit e_j	5,275	5,159	5,227	5,775	6,663	8,476	2,560	2,384	2,327	2,333	46,179
less/plus estimated net credit given (-)/taken (+)	-221	+48	+567	+616	-107	+876	+169	+118	+171	+170	+2,407
less increase in inventory value f_j	853	1,037	1,295	740	927	2,933	1,489	1,637	1,245	1,021	13,177
UK pretax operating cash flow n_j	4,201	4,170	4,499	5,651	5,629	6,419	1,240	865	1,253	1,482	35,409
less replacement investment A_j	2,045	2,198	2,283	3,141	3,253	4,374	1,013	706	1,024	1,243	21,280
interest payments F_j	1,465	1,706	1,858	1,986	2,339	3,291	1,023	1,608	1,113	1,134	16,983
current transfers to charities	34	35	36	38	41	42	NA	NA	NA	NA	226
plus UK rent and non-trading income	1,723	1,905	2,132	2,452	2,936	4,135	1,274	1,317	1,299	1,366	20,539
UK CASH FLOW EARNINGS (pre-tax)	2,380	2,136	2,454	2,938	2,932	2,847	478	408	415	471	17,459
less UK tax payments: on income	1,102	1,177	1,567	1,554	1,475	1,753	531	526	604	551	10,840
UK tax payments: on capital t_{j-1}	18	61	96	81	72	68	NA	NA	NA	NA	396
plus net foreign income (less tax)	648	924	900	853	833	1,607	497	492	513	689	7,956
TOTAL INCOME (less tax)	1,908	1,822	1,691	2,156	2,218	2,633	444	374	324	609	14,179
DIVIDENDS P_{j-1}	1,492	1,601	1,453	1,621	1,603	1,675	443	403	426	344	11,061
RETAINED (in money terms)	416	221	238	535	615	958	1	(29)	(102)	265	3,118
RETAINED (in September 1974 prices)	705	358	358	734	791	1,122	1	(32)	(106)	275	4,206
gross domestic fixed capital formation $A_j + R_j$	3,071	3,577	3,976	4,039	4,424	5,888	1,581	1,742	1,838	1,731	31,867
net capital transfers (incl. cash grants)	438	592	515	587	401	364	80	69	58	89	3,193
corporate tax rates on UK cash flow earnings	47%	58%	68%	56%	53%	64%	111%	129%	146%	117%	64%

*Quarterly data

ILLUSTRATION II

Inventory investment, credit taken and credit given

Period	1		2		3		4	
	units	£	units	£	units	£	units	£
a_{j-1} opening inventory	—	—	100	75	100	75	100	75
b_j { variable costs	1,000	750	1,000	750	1,000	750	1,000	750
fixed costs		250		250		250		250
	1,000	1,000	1,100	1,075	1,100	1,075	1,100	1,075
a_j closing inventory	100	75	100	75	100	75	100	75
$c_j = a_{j-1} + b_j - a_j$ cost of sales	900	925	1,000	1,000	1,000	1,000	1,000	1,000
d_j sales invoiced		1,350		1,500		1,500		1,500
$e_j = d_j - c_j$ profit	900	425	1,000	500	1,000	500	1,000	500
$f_j = (b_j - c_j) = (a_j - a_{j-1})$ periodic inventory investment	100	75	—	—	—	—	—	—
$a_j = \sum f_j$ total inventory investment	100	75	100	75	100	75	100	75
h_j paid out		950		1,000		1,000		1,000
$i_j = b_j - h_j$ periodic credit taken		50		—		—		—
$j_j = \sum i_j$ total credit taken		50		50		50		50
$k_j =$ cash collected		1,296		1,494		1,500		1,500
$l_j = d_j - k_j$ periodic credit given		54		6		—		—
$m_j = \sum l_j$ total credit given		54		60		60		60
$n_j = k_j - h_j$ operating cash flow		346		494		500		500
$p_j = (f_j - i_j + l_j) = (e_j - n_j)$ periodic working capital investment		79		6		—		—
$q_j = \sum p_j = a_j - j_j + m_j$ total working capital investment		79		85		85		85

ASSUMPTIONS

- i. The company commences business at the beginning of period 1.
- ii. Except for period 1 when it builds up an inventory representing 10% of periodic production, the latter remains at a constant level of 1,000 units.
- iii. Costs are constant in money terms.
- iv. Inventories are valued at variable cost on a FIFO basis.
- v. Product selling price is £1.50 unit.
- vi. Total credit taken constitutes 5% of periodic costs, that is, $j_j = 0.05b_j$.
- vii. Total credit given constitutes 4% of periodic sales invoiced, that is $m_j = 0.04d_j$.

ILLUSTRATION III**Inventory investment, credit taken and given and selling price increases**

<i>Period</i>	<i>1</i>		<i>2</i>		<i>3</i>		<i>4</i>	
	<i>units</i>	<i>£</i>	<i>units</i>	<i>£</i>	<i>units</i>	<i>£</i>	<i>units</i>	<i>£</i>
aj-1 opening inventory	—	—	100	75	100	86	100	99
bj { variable costs fixed costs	1,000	750	1,000	863	1,000	992	1,000	1,141
		250		287		331		380
	1,000	1,000	1,100	1,225	1,100	1,409	1,100	1,620
aj closing inventory	100	75	100	86	100	99	100	114
cj = aj-1 + bj - aj cost of sales	900	925	1,000	1,139	100	1,310	1,000	1,506
dj sales invoiced		1,350		1,680		1,882		2,107
ej = dj - cj profit	900	425	1,000	541	100	572	1,000	601
fj = (bj - cj) = (aj - aj-1) periodic inventory investment	100	75	—	11	—	13	—	15
aj = $\sum f_j$ total inventory investment	100	75	100	86	100	99	100	114
hj paid out		950		1,142		1,314		1,511
ij = bj - hj periodic credit taken		50		8		8		10
jj = $\sum i_j$ total credit taken		50		58		66		76
kj = cash collected		1,296		1,667		1,874		2,098
lj = dj - kj periodic credit given		54		13		8		9
mj = $\sum l_j$ total credit given		54		67		75		84
nj = kj - hj operating cash flow		346		525		560		587
pj = (fj - ij + lj) = (ej - nj) periodic working capital investment		79		16		13		14
qj = $\sum p_j$ = aj - jj + mj total working capital investment		79		95		108		122

Additional assumptions (compared with Illustration II)

- i. Costs increase at 15% annually.
- ii. Selling prices increase at 12% annually.

ILLUSTRATION IV**Constant costs and prices, inventory investment, credit taken and given**

<i>Period</i>	<i>1</i>		<i>2</i>		<i>3</i>		<i>4</i>	
	<i>units</i>	<i>£</i>	<i>units</i>	<i>£</i>	<i>units</i>	<i>£</i>	<i>units</i>	<i>£</i>
aj-1 opening inventory	—	—	100	75	110	83	121	91
bj { variable costs fixed costs	1,000	750	1,100	825	1,210	908	1,331	998
		250		250		250		250
	1,000	1,000	1,200	1,150	1,320	1,241	1,452	1,339
aj closing inventory	100	75	110	83	121	91	133	100
cj = aj-1 + bj - aj cost of sales	900	925	1,090	1,067	1,191	1,150	1,319	1,239
dj sales invoiced		1,350		1,635		1,787		1,979
ej = dj - cj profit	900	425	1,090	568	1,191	637	1,319	740
fj = (bj - cj) = (aj - aj-1) periodic inventory investment	100	75	10	8	11	8	12	9
aj = $\sum f_j$ total inventory investment	100	75	110	83	121	91	133	100
hj paid out		950		1,071		1,154		1,244
ij = bj - hj periodic credit taken		50		4		4		4
jj = $\sum i_j$ total credit taken		50		54		58		62
kj = cash collected		1,296		1,624		1,781		1,971
lj = dj - kj periodic credit given		54		11		6		8
mj = $\sum l_j$ total credit given		54		65		71		79
nj = kj - hj operating cash flow		346		553		627		727
pj = (fj - ij + lj) = (ej - nj) periodic working capital investment		79		15		10		13
qj = $\sum p_j$ = aj - jj + mj total working capital investment		79		94		104		117

Additional assumption (compared with Illustration II)

Output and inventory increase at 10% annually.

ILLUSTRATION V**Cost and selling price increases combined with growth**

<i>Period</i>	<i>1</i>		<i>2</i>		<i>3</i>		<i>4</i>	
	<i>units</i>	<i>£</i>	<i>units</i>	<i>£</i>	<i>units</i>	<i>£</i>	<i>units</i>	<i>£</i>
a_{j-1} opening inventory	—	—	100	75	110	95	121	120
b_j { variable costs	1,000	750	1,100	949	1,210	1,210	1,331	1,518
fixed costs		250		288		331		380
	1,000	1,000	1,200	1,312	1,320	1,636	1,452	2,018
a_j closing inventory	100	75	110	95	121	120	133	152
$c_j = a_{j-1} + b_j - a_j$ cost of sales	900	925	1,090	1,217	1,199	1,516	1,319	1,866
d_j sales invoiced		1,350		1,831		2,256		2,779
$e_j = d_j - c_j$ profit	900	425	1,090	614	1,199	740	1,319	913
$f_j = (b_j - c_j) = (a_j - a_{j-1})$ periodic inventory investment	100	75	10	20	11	25	12	32
$a_j = \sum f_j$ total inventory investment	100	75	110	95	121	120	133	152
h_j paid out		950		1,225		1,526		1,880
$i_j = b_j - h_j$ periodic credit taken		50		12		15		18
$j_j = \sum i_j$ total credit taken		50		62		77		95
$k_j =$ cash collected		1,296		1,812		2,239		2,758
$l_j = d_j - k_j$ periodic credit given		54		19		17		21
$m_j = \sum l_j$ total credit given		54		73		90		111
$n_j = k_j - h_j$ operating cash flow		346		587		713		878
$p_j = (f_j - i_j + l_j) = (e_j - n_j)$ periodic working capital investment		79		27		27		35
$q_j = \sum p_j = a_j - j_j + m_j$ total working capital investment		79		106		133		168

Assumptions

Major assumptions in Illustrations II to IV (inclusive) combined.

ILLUSTRATION VI

Factors in the 1974 financial crisis in British industry

Year	1972		1973		1974		1975	
	units	£	units	£	units	£	units	£
a_{j-1} opening inventory	—	—	100	75	110	107	110	150
b_j { variable costs	1,000	750	1,100	1,073	1,100	1,502	1,100	2,102
fixed costs		250		325		455		637
	1,000	1,000	1,200	1,473	1,210	2,064	1,210	2,889
a_j closing inventory	100	75	110	107	110	150	110	210
$c_j = a_{j-1} + b_j - a_j$ cost of sales	900	925	1,090	1,366	1,100	1,914	1,100	2,679
d_j sales invoiced		1,350		1,799		2,269		2,836
$e_j = d_j - c_j$ profit		425		433		355		157
$f_j = (b_j - c_j) = (a_j - a_{j-1})$ periodic inventory investment	100	75		32		43		60
$a_j = \sum f_j$ total inventory investment	100	75		107		150		210
h_j paid out		900		1,358		1,901		2,661
$i_j = b_j - h_j$ periodic credit taken		100		40		56		78
$j_j = \sum i_j$ total credit taken		100		140		196		274
$k_j =$ cash collected		1,242		1,763		2,186		2,779
$l_j = d_j - k_j$ periodic credit given		108		36		83		57
$m_j = \sum l_j$ total credit given		108		144		227		284
$n_j = k_j - h_j$ operating cash flow		342		405		285		118
$p_j = (f_j - i_j + l_j) = (e_j - n_j)$ periodic working capital investment		83		28		70		39
$q_j = \sum p_j = a_j - j_j + m_j$ total working capital investment		83		111		181		220

ASSUMPTIONS

- Output increases by 10% in 1973 and is constant thereafter.
- Costs increase by 30% in 1973 and 40% in 1974 and 1975 respectively (year-on-year).
- Selling prices increase by 10% in 1973 and 25% in 1974 and 1975 respectively (year-on-year).
- Total credit taken constitutes 10% of invoiced costs ($j_j = 0.1b_j$).
- Total credit given constitutes 8% of invoiced sales ($m_j = 0.08d_j$).

ILLUSTRATION VIIAnnual capital charge, C , as a function of asset life, w , and cost of capital, r .

$\begin{array}{c} r \\ \backslash \\ w \end{array}$	0.01	0.05	0.10	0.15	0.20	A_0/w
1	1,010	1,050	1,110	1,150	1,200	1,000
5	206	231	264	298	334	200
10	106	130	163	199	239	100
15	72	96	131	171	214	67
20	55	80	117	160	205	50

Notes: i. A_0 is an assumed asset acquisition cost of £1,000.ii. A_0/w is annual depreciation calculated on a fixed instalment basis.iii. The annual capital charge, C , is given by: $C = A_0 \left[\frac{r}{1 - (1+r)^{-w}} \right]$ **ILLUSTRATION VIII**Present value, W , of fixed instalment depreciation charges, A_0/w , as a function of asset life, w , and cost of capital, r .

$\begin{array}{c} r \\ \backslash \\ w \end{array}$	0.01	0.05	0.10	0.15	0.20	A_0/r
1	990	952	909	870	833	1,000
5	971	866	758	670	598	200
10	947	772	614	502	419	100
15	929	695	510	392	313	67
20	902	623	426	313	243	50

Note: $W = \frac{A_0}{w} \left[\frac{1 - (1+r)^{-w}}{r} \right]$ (see also notes to Illustration VII).*Symbols used:* a_j : inventory at end of year j A_j : replacement capital expenditure paid in year j b_j : revenue expenditure invoiced to a company in year j B_j : external equity finance (+) or repaid (−) by a company in year j c_j : cost of sales in year j C : annual capital charge d_j : sales invoiced in year j D_j : dividend paid to shareholders in year j e_j : assessable profits for tax purposes (or pre-depreciation profit measured on an accruals basis) in year j E_j : net profit (i.e. less depreciation, interest and tax charges) measured on an accruals basis in year j

f_j : additional inventory investment in year j ($= a_j - a_{j-1} = b_j - c_j$)	N_j : medium and/or long term debt raised (+) or redeemed (-) in year j
F_j : interest charged (and paid) in year j	P_j : additional working capital invested in year j ($= l_j + f_j - i_j$)
G_j : cash grants received in year j	q_j : total working capital invested at <i>end of year</i> j ($= \sum p_j = m_j + a_j - j_j$)
h_j : cash paid to suppliers in year j on account revenue expenditure b_j	r : weighted average cost of capital
i_j : additional credit taken in year j ($= h_j - b_j$)	r_e : cost of equity capital
j_j : total credit taken at <i>end of year</i> j ($= \sum i_j$)	R_j : growth investment in year j
k_j : cash collected from customers in year j on account of sales invoiced d_j	r_i : cost of debt capital
l_j : additional credit given in year j ($= d_j - k_j$)	t_j : corporation tax payment due in year j
L_j : accounting depreciation (as opposed to tax depreciation) on [the written down value of assets at the <i>beginning</i> of year j plus (less) assets acquired (retired) during year j]	T_j : nominal rate of corporation tax charged in year j
m_j : total credit given at <i>end of year</i> j ($= \sum l_j$)	$\hat{T}_j$: basic rate of income tax in year j
M_j : year j increase in bank overdraft or reduction in bank balance (+) or decrease in bank overdraft or increase in bank balance (-)	V_j : market value of company's equity at end of year j
n_j : operating cash flow in year j ($= k_j - h_j$)	w : asset life in years
	W : present value of fixed instalment depreciation charges

Price-level Accounting: Some Unfinished Business

George J. Staubus

The great longevity and the volume of written and spoken words associated with the debate on general price-level accounting suggests that little more should be said or written on the subject. But recent literature still indicates that some points have not been made clearly. One of these relates to the choice of the capital maintenance concept, and measure of it, that ties in most closely with the objective of accounting. Another is the legitimacy of including gains on long-term and short-term debt in income. A third is the roles of current value accounting and price-level restatements and the need for both. A brief review of the logical basis for price-level restatements will serve as a foundation for the subsequent discussion.

Measurements of flows, such as the revenues, expenses, gains and losses that constitute business income, require comparisons of measurements of stocks at two points in time. Many expense measurements, for example, involve adding a beginning balance and current acquisitions, then subtracting an ending balance. For the result to be clearly interpretable the three measurements must be made in a common unit. And when different line items are added and subtracted on an income statement common units are also desirable.

Accountants traditionally have considered all units of money which are denominated in the same currency to be comparable. Thus, all money amounts expressed in Deutschmarks are considered subject to addition and subtraction without any adjustment; 'a DM is a DM is a DM'. This means that the number of monetary units is the focus of our concern; what the money units will buy is ignored. The alternative view is that Deutschmarks, and pounds sterling and United States dollars, are significant because of what one can buy with them, and since this — their purchasing power — varies over time, 'a DM is not a DM is not a DM'. The size of the monetary unit actually varies so that adjustments must be made to express measurements relating to different dates in a common unit. Preparing financial statements in monetary units adjusted for the changes in a pur-

chasing power index, or price level index, may be called 'price level accounting', 'general purchasing power accounting', 'accounting in units of general purchasing power', 'current purchasing power accounting' or 'common unit accounting'. The latter term will be used here to apply to the currency of any country, to avoid implying the use of a particular type of index, and to suggest the basic objective of the procedure in a short phrase. Under whichever name one may prefer, common unit accounting is, in the mid-1970s, under serious consideration in major English-speaking countries as an alternative to accounting in numbers of monetary units of varying sizes.

Common unit accounting is intended to make all monetary amounts appearing on any one financial statement, and on any articulated set of financial statements presented at one time, comparable in terms of purchasing power. Thus, if \$95 is subtracted from \$100 the \$5 remainder can be read as five dollars with the purchasing power that dollars have as of the date of the financial statement. While application of current value measurement methods (excluding historical cost) do express all measures on one balance sheet in monetary units of the same purchasing power, such a measurement system does not achieve common purchasing power measurements on an income statement or on comparative balance sheets. A 'scale adjustment' for changes in our measuring instrument — the monetary unit — must be made in order to achieve purchasing power comparability of measurements made at different times under inflationary conditions.¹

¹While most readers may have found this simple explanation unnecessary at this stage of the debate, the author's contacts with prominent accounting authorities suggests that misconceptions still exist. In mid-1975 a member of the Sandilands Committee indicated, in conversation, that 'price levels do not change; only prices of individual goods change'. The point is that the significance of the monetary unit to individuals does change and the changes can be measured with useful accuracy by a price index. Perfect measurement of the change is not necessary for common unit accounting to be helpful.

The index choice and capital maintenance

The general objective of common unit accounting – to report in units of equal purchasing power – was clarified in the above introduction, but the specifics of this objective were not discussed. Now we need to face up to questions such as, 'Whose purchasing power?' and 'Power to purchase what?' Since the need for restating nominal units to purchasing power units is particularly important for the computation of income, rather than for the preparation of a balance sheet, it may be helpful to give some attention to the distinction between capital and income. While the term 'capital' has many meanings, all of them relate to stocks of wealth (or interests in such stocks) while income relates to changes in stocks of wealth, or flows of wealth. The term 'capital maintenance' means having the same amount of capital at the end of a period as at its beginning so that the entity may 'break even', or have zero income. Once we have clarified what it means to maintain capital at its previous level, the computation of income follows. Income is the excess of ending capital over the amount needed to maintain capital at a constant (beginning) level. To paraphrase the definition by J. R. Hicks, income is the amount one can consume during a period and still be as well off at the end of the period as at the beginning.² Or, income is what can be consumed (or paid out by a corporation) and still maintain the original amount of capital intact.

What is required to maintain the original amount of capital intact? How much must we have at the end of the period in order to feel that we have maintained our capital? One possible answer to this is, if the net assets of the firm are worth as many dollars at the end of the period as the firm's net assets were worth at the beginning, capital has been maintained. This is the *money capital* concept of capital maintenance. It was, implicitly, rejected in the introduction when we turned to the purchasing power concept. Hereafter, we assume it is not acceptable. Having as many dollars at the end of the period as we had at the beginning is not the same as being as well off – if the purchasing power of the dollars has changed.

Another possible concept of capital maintenance is *physical capital* maintenance. In this view, if we have on hand as many units of materials, finished products and machine services as we had at the beginning of the period, or if we have enough cash to buy such equivalent physical assets, we have maintained our capital. By this approach, income realized by the sale of an asset may be computed by

deducting from its selling price the number of monetary units that it would take to replace the asset sold. This concept of capital maintenance requires the use of the replacement cost method of measuring expenses and would require that the holding gain (or loss) be excluded from income. Thus, if two widgets were purchased at the beginning of the period for \$6 each, one was sold for \$9 when its replacement cost was \$7, and the other is still on hand at the end of the period with a replacement cost of \$7.50, the income for the period would be \$9 less \$7, or \$2. No income would be recognized on the unsold widget. In circumstances which would make it difficult to determine and record the replacement cost of each commodity, a narrow (specific) price index reflecting changes in the prices of commodities of the category of the ones being measured could be used to approximate specific replacement cost.

Now let us consider the implications of the physical capital maintenance concept. If the cost of goods sold is determined by replacement cost, how does a trader who buys and sells securities, or a commodities speculator, earn any income? If a trader is buying and selling in the same market, replacement cost at the time of sale (the measure of cost of goods sold) must be the same as selling price, so no income is ever recognized. Or, consider the case of the two trading companies, X and Y. Suppose X invests in commodity A which rises in price and Y invests in commodity B which falls. If the cost to be matched with revenues upon sale are replacement costs, A and B will appear to have performed equally well, that is they will show equal incomes: zero. In effect, if capital maintenance means that we must be able to replace what we sold or consumed in the course of business, it makes no difference which assets we buy and hold. But surely we are better off holding assets which rise in price than we are holding assets whose prices fall! It is difficult to imagine anyone choosing a physical concept of capital maintenance in the face of this evidence.

A variation on the physical concept of capital maintenance is the use of an index of prices of commodities purchased by the firm (including raw materials or merchandise and plant assets such as machinery and buildings). Such an index would measure changes in the power of the monetary unit (e.g. dollar) to purchase the things the firm is required to purchase to stay in business. Such a concept of purchasing power might appear to be an appropriate one for implementation of the general purchasing power restatement proposal. On closer examination, however, this idea is essentially a physical capital maintenance approach and is subject to the evaluation

²J. R. Hicks, *Value and Capital* (Oxford: Clarendon Press, 1946), p. 172.

in the preceding paragraph. If it were adopted, a firm holding a set of assets that fell in price would look just as good as a firm that held a rising 'portfolio' of assets.

It has been argued that a firm does not have income until it has provided for maintaining the same productive capacity and carrying the same inventories as it had at the beginning of the period. According to this argument, if prices pertaining to our industry rise faster than average prices in the economy, and if income taxes and dividends are based on a computation of income that does not provide for replacing the physical assets (or their services) consumed, then 100% payout of reported income would require either borrowing more money or contracting the physical operations of the firm. But could not a firm be driven out of business by such policies?³

This argument does not recognize that *maintenance of physical capacity is not necessary to maintain the real earning power and investment value of the firm*. A phenomenon associated with mobility of capital is the tendency towards a common rate of return on capital in firms with similar risk levels if there is freedom of entry and exit. Thus if companies X and Y start out with equal capital, but X's assets rise in price more than Y's, and if owners' capital is retained (or added) to permit the financing of the higher priced assets, in fluid capital markets and under competitive conditions, X's earnings must rise more than Y's so as to provide a rate of return on investment that is comparable for the two firms. Otherwise, capital would tend to flow out of one industry and into the other. In other words, maintenance of physical capital in a more inflationary industry will tend to increase the industry's real earning power. If the capital has greater earning power, it is a larger quantum of capital, so capital has been more than maintained. The firm purchasing power concept of capital maintenance is rejected.⁴

³An excellent statement of this position has been made by Lawrence Revsine and Jerry J. Weygandt, 'Accounting for Inflation: the Controversy', *Journal of Accountancy*, October 1974, pp. 72-78. Another prominent advocate of the specific entity capital maintenance concept is R. S. Gynther. See his 'Why Use General Purchasing Power?', *Accounting and Business Research*, Spring 1974, pp. 141-157, and earlier works.

⁴As an aside we may observe that, if the price of a commodity rises faster than a general price index over a considerable period (presumably due to a supply constraint), its sales volume typically will decline (if there is any elasticity of demand) so the company may be able to maintain its share of the market without maintaining the same physical volume of operations. In any event, a company's 'right' to maintain its physical level of operations surely is weak compared to its duty to maintain the amount of consumer purchasing power which its shareholders have entrusted to it.

The decision-usefulness approach to accounting issues has not been mentioned in the above discussions of possible capital maintenance concepts. When the Hicksian concept of income is associated with the *objective of producing accounting data that are useful to the readers of financial statements*, it becomes apparent that it is the users' purchasing power with which accountants should be concerned. If we agree that the managers are working for the owners and that employees make only limited use of financial statements, the major groups of users who appear to warrant substantial consideration here are investors (owners and creditors, including suppliers) and taxing authorities. It is investors' well-offness that managers are trying to maximize and that governments are trying to tax.

People invest in enterprises in order to increase the utility of their wealth - to have greater purchasing power than they would otherwise have. Investors like to know their income so they can know how much they can consume without eating into their capital. From a longer-term perspective, an individual needs to predict his life-time income and know his beginning capital if he is to spread his consumption and bequests in a pattern that equalizes marginal utility and maximizes total utility. Knowledge of his income in the recent past and knowledge of his present capital (after including income to date) are helpful in predicting future returns available for consumption expenditures. If an investor owning an interest in a business is taxed on a return of capital by a taxing authority who intends to be taxing income, or if he spends for personal consumption a cash return which he believes to be income but is in fact a return of capital, accounting is not providing the information that is most relevant to those decisions, viz. the change in the purchasing power of the investor's wealth. For an investor's multi-period investment-consumption decisions, for income taxation decisions and for decisions regarding managers' success in achieving owners' objectives - for all of these basic uses of income information, *capital is maintained when the investor has end-of-period wealth with the same consumption purchasing power as he had at the beginning of the period and income is an increase in the investor's stock of consumption purchasing power*.

The argument that the corporate accountant cannot use the different purchasing power indexes of each individual shareholder must be read as either a weak excuse for inaction or an insistence on a degree of perfection that accountants have not reached in the past and are not likely to reach in the future. Surely a broadly based price index provides a better measure of the change in the measuring unit

than the assumption that there is no change at all, as the millions of people who base contracts on such indexes recognize.

The appropriate index to use in restating accounting measurements in units of purchasing power is an index of prices of goods consumed by investors. To this author's knowledge, no such index has been constructed and maintained in any country. The best-known consumer price index in the USA is an index of prices paid by factory wage earners and clerical employees which is not ideal for price level restatements. Fortunately, the Labor Department is planning to commence publication of a new consumer price index in April 1977. It will reflect prices paid by a broader segment of the population but will not be specifically aimed at the investor segment. Still another index appears to be needed.

In practice, the Accounting Standards Steering Committee has chosen the British retail price index and the Irish consumer price index for use in common unit accounting. The Financial Accounting Standards Board, on the other hand, has, as of this date, selected an economy-wide index – the gross national product implicit price deflator – and similar indexes have been suggested for use in Australia and Canada.

Note that the extent of price change reflected by the chosen index establishes 'par' for changes in specific prices. Assuming that assets are measured at their current values, if the price of a particular asset increases by the same percentage as the index, no real gain or loss occurs; only a greater than average, or less than average, increase would be recognized as an income item. Thus, under a *physical* concept of capital maintenance, no gain or loss would be recognized when assets were revalued to current replacement cost; the offsetting entry would always be reflected as a restatement of owners' equity. But if an investor purchasing power concept of capital maintenance were accepted, revaluations of specific assets other than in proportion to the change in the chosen index would result in a holding gain or loss on the asset. The chosen index is also used for measuring the loss from holding cash and other monetary assets and the gain from being in debt during inflation.

One other point relating to capital maintenance needs to be made here. Our standard of capital maintenance must be consistent across all balance sheet items if the sums and difference reflected in the residual equity are to be clearly interpretable. For example, we must not apply different indexes in restating monetary and non-monetary items. If a monetary asset must increase in nominal units by the percentage increase in the consumer price index in order to maintain its real value, the same is true

of a non-monetary asset. If, on the other hand, an entity purchasing power index is applied to restate non-monetary items, it should also be applied to monetary items. A loss or gain is then reported in the amount of any difference between the restated beginning measurement and the ending measurement, whether the item is monetary or non-monetary, an asset or a liability.

Is the gain on debt income?

Individual members of two of the national standards setting bodies have taken the position, in confidential correspondence, that the restatement of long-term debt is not an income item on a current basis. The best known application of common unit accounting in the United States – that at the Indiana Telephone Company – defers the recognition of such income until the debt is retired. Another position that has appeared in print is that the restatement of debt should be deducted from the value of the assets financed by the debt and thus charged to expense as the asset is depreciated or sold.⁵ It is likely that others question the propriety of the majority view – that the shrinkage in the burden of fixed debt as the purchasing power of the monetary unit in which the debt is denominated shrinks, is income when the inflation occurs. Perhaps an example will help clarify this issue.

A static firm holds 1,000 units of a commodity through a period when the price index increased by 10%. The conventional balance sheet remained as follows:

BALANCE SHEET
throughout 19x1

Commodity, 1,000 units \$100	Debt \$40
	Residual equity \$60

Upon restatement and revaluation of the debt, this balance sheet reflects income of 4 end-of-period dollars, that is, a residual equity amount \$4 greater than is necessary to maintain the residual equity-holders' purchasing power. The income is derived from a gain on the debt. (Restated initial debt minus ending amount: \$44 – 40 = \$4.)

⁵Marvin M. Deupree, 'Accounting for Gains and Losses in Purchasing Power of Monetary Items' in Staff of the Accounting Research Division, 'Reporting the Financial Effects of Price-Level Changes', *Accounting Research Study No. 6* (American Institute of Certified Public Accountants, 1963), pp. 153–165.

BALANCE SHEET
Restated and Revalued
12/31/x1

Commodity, 1,000 units \$110	Debt	\$40
	Residual equity	\$70

Is this \$4 income distributable? Yes, it is, if it is real at all. If the market selling price of the commodity is now \$0.11 per unit, the firm can sell 36 units for \$3.96 and pay a cash dividend of that amount, or it can pay a dividend in kind by distributing 36 units of the commodity, leaving the following balance sheet at the start of the next period:

BALANCE SHEET
1/1/x2

Commodity, 964 units \$106.04	Debt	\$40
	Residual equity	\$66.04

If the price level again increases by 10%, a restatement and revaluation of the debt to \$40 would leave an income of \$4, which could be distributed in the same manner. This practice can continue as long as the price level increases, the price of our commodity keeps pace and the commodity is divisible enough to permit carving off a portion for sale or distribution. The earning power of the company is not reduced below its beginning-of-period level by such distributions. But note two things that common unit accounting does not do: (1) it does not, by itself, account for unrealized gains or losses due to specific price changes different than the index; current value accounting, along with common unit accounting, is needed to reflect this properly; (2) it does not report on liquidity any more than other accrual accounting systems do; a liquidity-oriented funds statement is needed for this purpose.

In other words, a price-level gain on debt represents 'better-offness' of owners and is distributable to them without impairing capital. Like any other accrual basis income, it does not assure liquidity. The potential problem of a profit accompanied by a cash shortage is a risk involved in computing income on any non-cash basis. But it is difficult to see how the use of cash to pay off the debt would make the gain any more distributable. Nor does paying off the debt change the exposure to inflation as the reductions in cash and debt offset each other, leaving the net monetary position unchanged. How can debt retirement (and disbursement of cash) be considered a realization event related to a gain?

ACCOUNTING AND BUSINESS RESEARCH

We must realize that a complete, systematic approach to common unit accounting requires recognition that the purchasing power significance of nominally constant debt and monetary assets changes with inflation; we cannot recognize restatement on unbalanced parts of the balance sheet and still have a balancing statement. The idea that debtors gain from inflation is as widely accepted as any aspect of inflation accounting; the only possible question (within the context of inflation accounting) is when to recognize it. Accumulating the periodic gains associated with a long-term debt issue until its retirement and reporting them as one amount in the profit and loss account at that time is just as uninformative as ignoring 'unrealized' gains and losses associated with changes in market prices of securities held by an investment company – a practice which accounting theorists rejected long ago. The simple, intuitive answer seems best in this case.

The roles of current value accounting and common unit accounting

The number of prominent people who confuse the roles of current value accounting and common unit accounting is almost frightening. We shall refrain from embarrassing them by mentioning their names. One of the most common manifestations of such confusion is a statement to the effect that one or the other of these systems is the preferred solution to the inflation accounting problem. Another type of loose statement that implies confusion in the mind of the speaker is a comment on 'replacement cost accounting', without any indication of whether the revaluations are to be treated as income or not. As we stated in the discussion of capital maintenance, revaluation to replacement cost without recognition of income effects implies that a commodities trader has no income and that it makes no difference whether a business holds commodities which rise in price or fall – surely an unacceptable position. The alternative of recognizing all revaluations as gains or losses affecting income is to deny that the changing purchasing power of the monetary unit is significant to financial statement users. To what, then, is any form of replacement cost accounting, by itself, a solution? The following exercise, which the author has used for years in teaching, may be helpful.

An Exercise in Current Value and Common Unit Measurement

At the beginning of period one, when a consumer price index stands at 100, Jane Doe purchases a share of X Company stock for \$100. At the end of period one, Doe still holds the stock, its market price

is \$108 and the price index is at 110. Early in period two, while the price index is still at 110, Doe sells the stock for \$106.

What is her income in period one? in period two? for the venture? Make these income calculations under several different measurement methods. Which measurement method yields asset and income num-

bers that appear to be most relevant to (a) a prospective lender's decision regarding lending money to Doe, (b) a judgment of Doe's performance as a portfolio manager, (c) the taxation of Doe's income, and (d) Doe's decision as to how much she can consume and still be as well off at the end of each period as she was at its beginning?

	Variable units		Common units	
	Historical cost	Current market	Historical cost	Current market
<i>Period one</i>				
Beginning	\$100	\$100	\$110	\$110
End	100	108	110	108
Income	\$ 0	\$ 8	\$ 0	\$ -2
<i>Period two</i>				
Beginning	\$100	\$108	\$110	\$108
End	106	106	106	106
Income	\$ 6	\$ -2	\$ -4	\$ -2
<i>Venture Income</i>	\$ 6	\$ 6	\$ -4	\$ -4

The following comments pertaining to this exercise are offered:

1. Note that the choice between historical cost and current market value affects the *timing* of the reported income.
2. The choice between traditional variable dollar accounting and common dollar accounting affects the *total income* over the life of the venture.
3. The difference between common dollar and variable dollar income over the life of the venture is \$10 which is equal to the percentage change in the general price index times the beginning owner's equity stated in beginning dollars. This is a simple example of the *general rule that the lifetime earnings of an entity, or on an investment, as of the dates originally recorded, are larger under variable unit accounting than under common unit accounting by the sum of the products of periodic inflation rates times beginning-of-period, common unit residual equity amounts.*

This may be considered a simple test of the relevance of data produced by different measurement methods – relevance to the types of uses suggested just before the tabulated solutions. Assuming that no serious qualifications on grounds of cost, reliability and so forth are warranted in this simple case, the

reader's choice of solutions indicates his view of the relevance of the alternative sets of data to the types of decisions listed. The author believes the common dollar, current market column includes the most relevant information.⁶ Doe's investment does not appear to have been successful in either period one or period two and she should not be required to pay any income tax on this venture. Each of the other three columns yields manifestly less useful results. Furthermore, there is no apparent reason why the absurdities of the other solutions in this simple case are any less absurd in more complex situations.

Common unit accounting is necessary to eliminate the effects of changes in the significance of the measuring unit by restating all old measurements for comparison with current measurements in calculating income. Current value accounting is required to distribute income due to differential price movements over the periods in which it occurs. If you only wish to accomplish one of these objectives, at least choose the right tool for the job.

⁶For an early formulation of the current value accounting, common unit accounting proposal, see George J. Staibus, *A Theory of Accounting to Investors* (University of California Press, 1961), pp. 116-127.

Estimating the Human Capital Associated with an Organization

Wayne J. Morse

The purpose of this paper is to examine the potential usefulness of Markov Chains in estimating the human capital values associated with an organization.

Human Capital

The concept of human capital has received considerable attention in the economic literature in recent years as attempts have been made to explain the dramatic increase that has taken place in the return on tangible assets and to measure the returns from investment in education. Schultz has noted that less capital tends to be employed relative to income as economic growth proceeds when only nonhuman capital is considered. But, he adds that we cannot infer that the stock of all capital has been decreasing relative to income. If we assume that a roughly constant ratio between all capital and income is being maintained, the decline in the ratio between non-human capital and income is simply a signal that human capital has been increasing relative to conventional capital and income.¹ After an extensive study, Becker concluded that even after differences in ability are taken into account, the rates of return from college education are substantial.²

According to Lev and Schwartz, the value of human capital embodied in a person at time τ is the present value of his remaining future earnings from employment.³ Extending this notion, the value of the human capital associated with an organization is the present value of the future earnings of its current em-

ployees.⁴ Under conditions of certainty, the value of the human capital associated with an organization as it exists at time τ is⁵

$$C = \sum_{i=1}^N \int_{\tau}^T \frac{E_i(t)}{(1+r)^{t-\tau}} dt \quad (1)$$

where:

C = value of human capital associated with an organization;

N = number of individuals currently employed by the organization;

τ = current time;

T = highest time at which an individual currently employed leaves the organization;

$E_i(t)$ = all direct and indirect compensation given individual i at time t by the organization; and

r = time value of money.

With uncertainty, the value of the human capital associated with an organization at time τ may be expressed as:

⁴The restriction to current employees is similar to the approach taken by Philips in his definition of 'pension liability' as

... the value (at that point in time when we are measuring the liability) of the employer's obligation to make future pension payments to current and retired employees. This includes the obligation to make future payments based on or 'related to' services yet to be performed (unearned benefits) but excludes anticipated pension payments to those to be employed in the future.

Like Philips' definition of 'pension liability', the above definition of the 'human capital employed in an organization' cannot be demonstrated to be a 'true' definition, but it will be shown to be a useful one. See G. E. Philips, 'Pension Liabilities and Assets', *The Accounting Review*, January, 1968, pp. 10-17.

⁵W. J. Morse, 'A Note on the Relationship Between Human Assets and Human Capital', *The Accounting Review*, July, 1973, p. 590.

¹T. W. Schultz, 'Investment in Human Capital', *The American Economic Review*, March, 1961, p. 5.

²G. S. Becker, *Human Capital*, New York, Columbia University Press, National Bureau of Economic Research, 1964, pp. 79-88.

³B. Lev and A. Schwartz, 'On the Use of the Economic Concept of Human Capital in Financial Statements', *The Accounting Review*, January, 1971, p. 105.

$$C^* = \sum_{i=1}^N \left[\int_{\tau}^T \frac{E_i^*(t)}{(1+r)^{t-\tau}} dt - \int_{\tau}^T P_i(j) \frac{E_i^*(t)}{(1+r)^{t-\tau}} dt dj \right] \quad (2)$$

where:

*refers to expected values;

$P_i(j)$ = conditional probability of individual i 's leaving the organization at time j given that he is employed by the organization at time τ .

The first portion of equation 2 within the brackets represents the expected present value of the gross earnings of individual i assuming he remains with the organization until retirement. The second portion of equation 2 within the brackets represents the present value of the gross earnings of individual i which he will not receive because of the probability of his leaving the organization before retirement.⁶

Human Resource Accounting

The concept of human capital discussed in this paper is related to, but not the same as, the concept of human assets. However, accounting for human capital and accounting for human assets both fall under the general caption of human resource accounting:

Human resource accounting has two components: human asset accounting and human capital accounting. Human asset accounting is concerned with the determination of the value of the human resources employed in an organization *to the organization*. Human capital accounting is concerned with determining the value of the human resources employed in an organization *to the employees* of that organization.

Thus, the general classification, human resource accounting, has two subclassifications: human asset accounting and human capital accounting. Each is concerned with a separate aspect of the total human resources employed in an organization. The total value of the human resources employed in an organization is equal to the value of the organization's human assets and its employees' human capital.⁷

Most of the research in the area of human resource accounting has dealt with the cost of hiring and training employees, or the determination of the value of employees to an organization.⁸ However, conceptually, the value of the human assets employed in an organization is directly affected by the value of the human capital of the organization's employees.⁹ Additionally, Lev and Schwartz have suggested a number of inferences that decision makers could draw from reported values of human capital. These include inferences about the labour intensity of an organization and about changes in the structure of its labour force.¹⁰ Later in this paper, it will be shown that information about the potential effects of changes in turnover and pay scales on the organization's financial resources can also be determined from an analysis of changes in human capital values.

Under conditions of certainty, and in the absence of hiring, changes in the value of human capital from period to period are caused by wage payments and interest accumulation. With uncertainty and hiring, such things as changes in the discount rate, changes in wage rates, unexpected termination, and additional hiring may also cause changes in the value of human capital. A useful way of analyzing the effect of each of these items on human capital is to develop a Schedule of Changes in Human Capital.

It should be noted that Hekimian and Jones, and Flamholtz,¹¹ question the propriety of attempting to measure an individual's value to an organization by determining the present value of his future earnings. Indeed, the gross value of the services of all individuals employed in an organization should exceed the value of their earnings. It is this excess that leads to the notion of human assets. Assuming an organization employs additional personnel until the value of their marginal product equals their marginal cost, only the last person hired will have a gross value precisely equal to the value of his earnings. The concept of human capital is more concerned with measuring the present value of employment costs than measuring the net value of employees to an organization.

⁶The value of human capital associated with an organization when uncertainty exists is somewhat analogous to the concept of conditional value proposed by Flamholtz. However, the paper in which he proposed this concept was concerned with measuring the value of individuals to an organization while this paper is concerned with measuring the organization's possible commitments to its employees. See E. Flamholtz, 'Toward a Theory of Human Resource Value', *The Accounting Review*, October, 1972, pp. 668-671.

⁷Morse, op. cit., p. 593.

⁸Committee on Human Resource Accounting, 'Report of the Committee on Human Resource Accounting', *The Accounting Review*, Supplement to Vol. XLVII, 1973, pp. 182-185.

⁹Morse, op. cit., pp. 590-593.

¹⁰Lev and Schwartz, op. cit., pp. 107-109.

¹¹See: J. S. Hekimian and C. H. Jones, 'Put People On Your Balance Sheet', *Harvard Business Review*, January-February, 1967, pp. 107-113 and E. Flamholtz, 'On the Use of the Economic Concept of Human Capital in Financial Statements: A Comment', *The Accounting Review*, January, 1972, pp. 148-152.

Markov Approach

While equation 2 is a conceptually satisfying description of the amount of human capital associated with an organization in an uncertain world, it is difficult to make it operational. Fortunately, the literature contains numerous examples of the application of a mathematical technique to similar situations involving uncertainty and future cash flows. In a path-breaking article, Cyert, Davidson, and Thompson applied Markov Chains to the problem of estimating the allowance for doubtful accounts.¹² More recently, Shank applied Markov Chains to the problem of income determination at a tree farm.¹³ Similar models have also been suggested for use in manpower planning.¹⁴ Accordingly, it seems appropriate to use such a model to estimate the human capital associated with an organization. A Markov approach allows for movement between service states and wage classifications within an organization, and provides information about the impact of changes in wages, turnover, and personnel policies on the value of the human capital associated with an organization.

A Markov approach might also be used to estimate the value of current employees to professional organizations (i.e., human assets). Recently, Jaggi and Lau¹⁵ proposed such a model and developed an example of its potential usefulness in an accounting firm. Despite some similarities, their paper and model differs in a number of respects from this paper and the model presented in it.

First, the objective of the Jaggi and Lau model is to estimate the value of employees to an organization. This requires projections of both employment costs and the revenues that will be generated by employees' efforts. The ability to predict revenues associated with employee efforts is unlikely to exist in many organizations other than those rendering professional services on a fee basis. The objective of the model presented in this paper is to estimate the human

capital associated with an organization. While it is a more modest objective, it is an objective that can be attained in a large number and wide variety of organizations, including those in the not-for-profit sector of the economy.

Second, the formulation of their model requires an infinite number of calculations. To overcome this difficulty, Jaggi and Lau recommend that computations be terminated before a final solution is obtained because additional computations will not 'materially' change the value calculated with the use of their model. The model presented in this paper does not require an infinite series of calculations.¹⁶

Third, Jaggi and Lau give only passing consideration to the limitations of their model. The limitations of the model presented in this paper are stated and considered in some depth. Additionally, many of them are also applicable to the Jaggi and Lau model.

Finally, Jaggi and Lau do not consider the effect of changes in the parameters of their model. Changes in the parameters of the model presented in this paper are given formal consideration and a schedule is developed to show their effect on the human capital associated with an organization. Such a schedule might be a valuable addition to the Jaggi and Lau model.

In the remaining sections of this paper, the problem of estimating the human capital associated with an organization in an uncertain world will be modelled in terms of an absorbing Markov Chain. Following that, an example of how the model can be applied will be presented and the limitations of the model will be discussed.

The Model

The objective of the model is to estimate the value of the human capital associated with an organization given the current pay scale, turnover, and movement of employees through various service states and wage classifications within the organization. Intermediate steps in obtaining this objective include estimating the average number of years a current employee will spend in various service states, age categories, and wage classifications; and estimating the average number of man years all current employees will spend in various service states, age categories, and wage classifications.

The movement of employees through various service states, age categories, and wage classifications can be

¹²R. M. Cyert, H. J. Davidson, and G. L. Thompson, 'Estimation of the Allowance for Doubtful Accounts by Markov Chains', *Management Science*, April, 1962, pp. 287-303.

¹³J. K. Shank, 'Income Determination Under Uncertainty: An Application of Markov Chains', *The Accounting Review*, January, 1971, pp. 57-74.

¹⁴See: K. M. Rowland and M. G. Sovereign, 'Markov Chain Analysis of Internal Manpower Supply', *Industrial Relations*, October, 1969, pp. 88-89; V. H. Vroom and K. R. MacCrimmon, 'Toward a Stochastic Model of Managerial Careers', *Administrative Science Quarterly*, June, 1968, pp. 26-46; J. W. Walker, 'Models in Manpower Planning', in *Manpower Planning and Programming*, E. H. Barack and J. W. Walker, editors, Boston, Allyn and Bacon, 1972, pp. 130-142.

¹⁵B. Jaggi and H. Lau, 'Toward a Model for Human Resource Valuation', *The Accounting Review*, April, 1974, pp. 321-329.

¹⁶For a discussion of the mathematical formulation of the Jaggi and Lau model see: W. J. Morse, 'Toward a Model for Human Resource Valuation: A Comment', *The Accounting Review*, April, 1975, pp. 345-347. B. Jaggi and H. Lau, 'Toward a Model for Human Resource Valuation: A Reply', *The Accounting Review*, April, 1975, pp. 348-350.

FIGURE 1

Transition Probability Matrix of Employee Movement Through Service States, Age Categories, and Wage Classifications

	Termination			Service State I Service State II	
	Death	Retirement	Other	Age A	Age B
				Wage 1 Wage 2 Wage 3	
Service State I Age A					
Wage 1	r_{11}	r_{12}		$q_{11}q_{12}$	q_{1m}
Wage 2					
Wage 3	r_{31}				
Age B					
.....					
.....					
.....					
.....					
Service State II	 r_{ij}			 q_{ij}	
.....					
.....					
.....					
.....					
.....					
.....	r_{ni}			q_{ni}	q_{nm}

formulated as a transition probability matrix, as in Figure 1. The r_{ij} represent the probability of an employee leaving the organization during the next time period due to death, retirement, or other cause given his current service state, age category and wage classification. The q_{ij} represent the probability of an employee going from one service state, age category, and wage classification to another during the next time period. The information required to complete the matrix can be obtained from records of employee movement during the past year.¹⁷

¹⁷Such information should be developed by the personnel department for the purpose of manpower planning. Accordingly, the additional costs involved in using it for accounting purposes should be minimal. Problems caused by data requirements are discussed further in the section titled 'Limitations'.

The transition probability matrix presented in Figure 1 can be partitioned into two sub-matrices, R and Q. Then standard matrix operations can be performed on matrix Q to estimate the average number of years a current employee will spend in various service states, age categories, and wage classifications:¹⁸

$$N = (I - Q)^{-1} \quad (3)$$

where:

N = the fundamental matrix for an absorbing Markov Chain. The entries in N give the mean number of years an employee will be in each nonabsorbing state for

¹⁸J. Kemeny, A. Schleifer, Jr., J. Snell, and G. Thompson, *Finite Mathematics*, Prentice-Hall, Englewood Cliffs, 1972, pp. 222-229.

FIGURE 2 *

Transition Probability Matrix of Employee Movement: An Example

	Age 25-34				Age 35-44				Age 45-54				Age 55-64			
	Termination	Unskilled	Semi-skilled	Skilled	Professional	Unskilled	Semi-skilled	Skilled	Professional	Unskilled	Semi-skilled	Skilled	Professional	Unskilled	Semi-skilled	Skilled
Age 25-34																
Unskilled	.40	.43	.13	.20	.01	.02	.01	.01	.08							
Semi-skilled	.35		.40	.82	.01		.03	.07								
Skilled	.10				.01											
Professional	.05				.87											
Age 35-44																
Unskilled	.35				.35		.25	.09								
Semi-skilled	.20						.65	.86								
Skilled	.05															
Professional	.07				.86				.07							
Age 45-54																
Unskilled						.75	.07	.01		.07	.01					
Semi-skilled						.80	.80	.86			.10	.09				
Skilled																
Professional									.86				.09			
Age 55-64																
Unskilled	.15									.84	.01	.01				
Semi-skilled	.14										.85	.86				
Skilled	.14															
Professional	.12															.88

*The numbers in this table are contrived and a close analysis of them may reveal that they are unrealistic.

each possible nonabsorbing starting state;

Q = the matrix of transition probabilities between nonabsorbing states; and

I = an identity matrix of the same order as matrix Q .

The average number of man years all current employees will spend in various service states, age categories, and wage classifications can now be estimated by postmultiplying a row vector that indicates the number of employees in each service state, age category, and wage classification by N .

$$M = TN \quad (4)$$

where:

M = a row vector indicating the average number of man years all current employees will spend in each service state, age category, and wage classification; and

T = a row vector indicating the number of employees in each service state, age category, and wage classification.

Finally, the total compensation that will be paid to all current employees given the current pay scale and movement of employees through various service states, age categories, and wage classifications can be estimated by postmultiplying M by a column vector of compensation paid to individual employees in each service state, age category, and wage classification.

$$C_{nd}^* = MP \quad (5)$$

where:

C_{nd}^* = the estimated value of the human capital associated with an organization when the time value of money is zero; and

P = a column vector of compensation paid to individual employees in each service state, age category, and wage classification.

An immediate problem with the above procedure for estimating the total value of the human capital associated with an organization is the assumption of a zero value of money. Fortunately, this problem can be overcome by premultiplying Q by a scalar representing the present value of a dollar received one period from now.¹⁹

$$C^* = T(I - dQ)^{-1}P \quad (6)$$

where:

d = a scalar representing the present value of a dollar received one period from now.

Assuming an appropriate discount rate can be determined, equation 6 can be used to estimate the value of the human capital associated with an organization given the current pay scale, turnover, and movement of employees through various service states, age categories, and wage classifications.

Example

The basic transition probability matrix used in the example is presented in Figure 2. This matrix is simplified to conserve space. There is only one wage classification for each service state and age category, and the number of service states and age categories are limited. Vectors for the number of employees and yearly wage rates in each service state and age category are presented in Figure 3. The yearly wage rate includes all indirect compensation such as employer social security taxes and pension payments. For clarity of analysis, it is assumed that all pension benefits are funded and vested yearly.

Solving equation 3 for the information contained in Figure 2, the average number of years a current employee will spend in various service states, age categories, and wage classifications given his current status is obtained. This information is presented in Figure 4. Solving equation 4, the average number of man years all current employees will spend in various service states, age categories, and wage classifications is obtained. This information is presented in Figure 5. Using equation 5, the total compensation that will be paid to all employees is determined to be \$116,060,000. If consideration is given to the time value of money, as in equation 6, the total human capital associated with the organization is \$62,735,000 when the discount rate is 10%.

Assume the information in the example was used to estimate the human capital associated with an organization at $31/12 \times 1$. Under conditions of certainty, and with no additional hiring, the human capital associated with the organization at $31/12 \times 2$ is \$54,126,600. The change in the human capital

¹⁹ C^* is the present value of an infinite series of wage payments made at the beginning of each year:

$$C^* = TP + dTQP + d^2TQ^2P + d^3TQ^3P + \dots + d^kTQ^kP + \dots$$

$$C^* = T(I + dQ + d^2Q^2 + d^3Q^3 + \dots + d^kQ^k + \dots)P$$

$$C^* = T(I - dQ)^{-1}P$$

If it is assumed that the wage payments are made at the end of the year:

$$C^* = dT(I - dQ)^{-1}P$$

See: Cyert, *et al.*, op. cit., p. 294; J. K. Shank, *Matrix Methods in Accounting*, Addison-Wesley, Reading, 1972, pp. 89-95.

associated with the organization during 19×2 can be analyzed as follows:

Balance $31/12/\times 1$	\$62,735,000
Less: Compensation paid during 19 $\times$ 1	13,529,000
Net	\$49,206,000
Add: Interest at 10% on net	4,920,600
Balance ²⁰ $31/12/\times 2$	\$54,126,600

With uncertainty, a Schedule of Changes in Human Capital might be presented to analyze the effect of recent events on human capital values. Continuing the above illustration, assume 50 unskilled employees of age 25 were hired on $1/1/\times 2$, there was a 5% across-

²⁰The $31/12/\times 2$ balance may be verified by the use of matrix algebra. The number of employees in each age category and service state at $31/12/\times 2$ is TQ . Substituting this for T in equation 6, equation 7 is obtained:

$$C^* = TQ(I - dQ)^{-1}P \quad (7)$$

Solving equation 7 for the information in Figures 2 and 3 when the discount rate is 10%, $C^* = \$54,127,000$. The discrepancy is caused by rounding.

FIGURE 3

Vectors of the Number of Employees and Yearly Wage Rates

$T^T =$	600	$P =$	6,000
	70		6,500
	10		8,000
	30		12,000
	400		6,300
	80		6,800
	25		10,000
	35		15,000
	200		6,400
	50		7,000
	30		12,000
	40		17,000
	100		6,500
	55		7,000
	30		13,000
	50		22,000

the-board increase in wages as of $31/12/\times 2$, and 20% of the skilled employees of ages 55 through 64 terminated at $31/12/\times 2$. The Schedule of Changes in Human Capital presented in Figure 6 discloses the effect of each of these events on human capital.

Limitations

Implementation of the above model for estimating the value of the human capital associated with an organization is hindered by a number of assumptions. Some of these assumptions can be overcome by modifying the model to fit a particular situation. Others are fundamental in nature and restrict the model's applicability. The assumptions underlying the model, represented by equation 6, are:

- 1) Employees remain in their current age category, service state, and wage classification throughout the first year;
- 2) All transitions take place at the end of each year;
- 3) Employees are paid at the beginning of each year;
- 4) An appropriate discount rate can be determined;
- 5) Except for cost of living adjustments, pay scales are stable;
- 6) All pension benefits are funded and vested at the beginning of each period;
- 7) Sufficient data is available to develop the transition probability matrix; and
- 8) While the transition probability matrix may change as a result of future changes in the organization or the external environment, it is basically stable from period to period.

Problems caused by the first three assumptions can be overcome by mathematical manipulation and, hence, should cause little difficulty in attempts to implement the model. Selecting the appropriate discount rate poses a more serious problem and because of the complexity of the issues in it, this topic is beyond the scope of this paper.

The restriction of the model to current wage rates causes the value of the human capital associated with an organization to change whenever there is a change in wage rates. This is not a deficiency in the model. Indeed, the disclosure of the amount of such a change may provide useful information to investors, employees, and other interested parties. In the example presented above, an increase in wage rates caused an increase in the value of the human capital associated with the organization. This increase indicates that a larger amount of the future revenues of the organization will now go to the employees of the organization than was previously anticipated. If future wage increases can be anticipated, as a result of current

contractual arrangements, the model can be manipulated to take them into account.

The assumption relating to the funding and vesting of pension benefits severely restricts the model. These restrictions can be relaxed only by greatly increasing the mathematical complexity of the model or excluding the organization's contributions to pensions from the model and treating them as a separate issue.

Assumptions seven and eight are the most fundamental in any type of Markov analysis of personnel movement, and they restrict the model's usefulness

to 'large', 'stable' organizations. A large organization is necessary in order to obtain current information on the transition probabilities between various age categories, service states, and wage classifications. A stable organization is necessary in order to predict future employee movements. Two comments should be made about the stability of the organization. First, the stability assumption only refers to stability in the absence of changes in the organization (such as management style) or the external environment (such as a depression). If such changes take place and they affect employee turnover or other aspects of the transition probability matrix, the model is designed to provide information about the effects of such changes on human capital. Second, the stability assumption does not require that, in the absence of changes in the organization or the external environment, no changes take place in the transition probability matrix at any time in the future. As the discount rate increases the model becomes insensitive to future changes.

In any event, stability is the most important assumption underlying the model. Vroom and MacCrimmon have suggested that a χ^2 test could be used to determine whether or not the underlying process was stable over time.²¹ While the stability assumption may severely limit the number of businesses that can use the model presented in this paper, previous research has shown that the stability required by the model is present in a number of governmental organizations.²² This suggests that units of government might report the value of the human capital they employ in various activities to the public.

Conclusions

Markov models, which have been used for manpower planning and estimating future cash flows, may also be useful in estimating the human capital associated with 'large', 'stable' organizations. A major advantage of the Markov approach is that it allows for movement between service states and wage classifications and provides information about the impact of changes in wages, turnover, and personnel policies on the value of the human capital associated with an organization. The major limitations of the Markov approach are the initial data requirements and the need for stability in the absence of changes in the organization or the external environment.

²¹Vroom and MacCrimmon, op. cit., pp. 42-43. Also see T. W. Anderson and L. A. Goodman, 'Statistical Inference about Markov Chains', *Annals of Mathematical Statistics*, 28 (1957), pp. 89-110.

²²Walker, op. cit., pp. 136-137.

FIGURE 5
Average Number of Man-Years all Current Employees will spend in each Non-absorbing State

	Man-Years
Age 25-34	
Unskilled	1,052.60
Semi-skilled	344.74
Skilled	438.60
Professional	372.00
Age 35-44	
Unskilled	647.77
Semi-skilled	750.89
Skilled	905.21
Professional	462.57
Age 45-54	
Unskilled	877.73
Semi-skilled	772.16
Skilled	958.63
Professional	517.00
Age 55-64	
Unskilled	1,009.00
Semi-skilled	1,007.20
Skilled	902.49
Professional	804.42

FIGURE 6
Schedule of Changes in Human Capital

Balance 31/12/ × 1	\$62,735,000
Less: Compensation paid during 19 × 2 to employees of 31/12/ × 1	13,529,000
Net	\$49,206,000
Add: Interest at 10% on net	4,920,600
Expected balance 31/12/ × 2	\$54,126,600
Adjustments:	
Effect of additional hiring	675,400
Effect of wage increases	2,740,000
Effect of change in transition probabilities	(881,000)
Balance 31/12/ × 2	\$56,661,000

Anti-Dilution of Earnings per Share

L. C. L. Skerratt and K. V. Peasnell

The definition, calculation and interpretation of earnings per share is greatly complicated by the fact that company capital structures often include convertible debentures and share warrants. If these conversion and option rights are exercised, major changes in earnings per share (hereafter EPS) may result. The purpose of this article is to evaluate the ways in which the American and British earnings per share standards, APB Opinion 15¹ and SSAP 3² respectively, deal with this problem. Particular attention is paid to the practice of excluding 'anti-dilutions' from the dual EPS presentation.

The paper is organised into three sections: the first explains the key features of the British and American accounting standards concerning the treatment of convertibles and warrants in earnings per share calculations; the next section elaborates the deficiencies in the standards' exclusion of anti-dilution situations and their treatment of warrants; the relationship of this topic to certain wider accounting issues is discussed in the concluding section.

I. Outline of EPS treatment of convertibles and warrants

The UK standard

Under SSAP 3, dual presentation of EPS is required, so as to show the dilution effect of outstanding convertibles and warrants. The main EPS figure, 'basic EPS', always has to be shown. Only the weighted average of ordinary shares ranking for dividend that year is included in the computation. Unlike the American standard (see below), no 'dilution effects' are shown in the basic EPS figure.

¹Accounting Principles Board Opinion No. 15, 'Earnings per Share', issued May 1969 and reprinted in American Institute of Certified Public Accountants, *APB Accounting Principles: Original Pronouncements* (Chicago: Commerce Clearing House, 1972).

²Institute of Chartered Accountants in England and Wales, 'Statement of Standard Accounting Practice 3: Earnings per Share' issued February 1972 (revised August 1974).

In the second EPS figure, the whole of each convertible or warrant issue which, if exercised on the first day of the accounting period, would have had a diluting effect on the basic EPS figure, is treated as if those rights had so been exercised. The operation of this rule is irrespective of whether the terms of issue would have actually allowed the holders to exercise the option during the accounting period – it is thus clear that the second EPS figure serves to indicate the possible dilution of *all* future earnings as well as those of immediate concern. If there is more than one class of convertible and/or warrant, then only those instruments which would have had a diluting effect are to be shown.

There is no requirement to show the effects of exercising rights which would have served to increase rather than to dilute the basic EPS figure. Neither is the dilution effect required to be shown if the basic EPS is negative (a loss).

The US standard

Dual presentation also is required under Opinion 15. One important difference with SSAP 3 is that 'primary EPS' includes not only a weighted average of the common stock outstanding (i.e., net of 'treasury stock': repurchased shares of the company) for the year but also convertibles, warrants, etc, deemed to be 'common stock equivalents', if they have a dilutive effect.

The APB believed that convertible debt should be considered common stock equivalents if the cash yield on the bond at time of issuance is less than two-thirds of the current bank prime interest rate at that date (para. 33). As options and warrants have no cash yield and derive their value from their right to obtain common stock at preferred prices, they should be regarded as common stock equivalents at all times. All common stock equivalents having a dilutive effect are to be calculated as if they were exercised on the first day of the accounting period.

As in the British standard, the second EPS figure should show the full dilution effect on primary EPS (no anti-dilution). But as with the definition of

primary (or basic) EPS, there are important differences in the treatment of various aspects of dilution in the two standards.

Differences between the two standards

There are three differences in the treatment of convertibles and warrants on which we shall comment.

(1) Under SSAP 3 the earnings numerator and the (number of ordinary shares) denominator of the basic EPS figure are each consistent with the profit and loss statement and the balance sheet respectively (with some adjustments for the effects of rights issues, share exchanges and issues at full market price³); under APB Opinion 15, however, the existence of common stock equivalents means that primary EPS is not always reported on a basis consistent with that used in the main body of the financial statements.

We do not necessarily agree with Dudley W. Curry that this lack of reporting consistency (failure to articulate EPS figures with other reported data) of Opinion 15 is a 'serious short-coming'⁴; but it is reasonable to suggest that this failure of consistency should be compensated by some other benefit(s). *It is our contention that the inclusion of common stock equivalents in primary EPS is not helpful to the investor*; hence, the loss of consistency is not adequately compensated for.

(2) In the determination of both common stock equivalents for the primary EPS calculation and of the share base for fully diluted EPS, Opinion 15 recommends that imputed cash proceeds from the exercise of warrants be dealt with under the 'treasury stock' method. Under this method it is assumed that options and warrants were exercised at the beginning of the period (or at time of issuance, if later) and the cash proceeds were used to purchase the company's own common stock at the average market price during the period. The excess of shares issued over shares purchased, up to 20% purchase of the outstanding common stock, is to be treated as dilution. Where more than 20% could be purchased, the excess over 20% is to be assumed to be invested in government securities or commercial paper, earnings being credited with the interest.

Under SSAP 3 all the proceeds are assumed to be invested in 2½% Consolidated Stock on the first day of the period at the closing price of the

previous day. *It is our contention that the British treatment of imputed cash proceeds from the exercising of warrants is extremely unsatisfactory*; it can change the whole risk structure of reported earnings. For this reason, the American treatment (which, unfortunately, is not available to British firms – they are not permitted to repurchase their own shares) is less objectionable.

(3) The test to determine common stock equivalents recommended in Opinion 15 (i.e. cash yield on the bond is less than two-thirds of the prime rate at issuance date) is highly unsatisfactory. Frank and Weygandt⁵ and Hofstedt and West⁶ both present theoretical arguments and empirical evidence in support of the view that the test is not an effective predictor of future conversion.

It is not clear whether the Board expected the test to have predictive ability.⁷ But if not, it is difficult to see the value of the 'common stock equivalents' concept. Or, putting it the other way round, one must agree with Frank and Weygandt when they say: 'Clearly, if only the *right* of convertible bondholders to exchange their bonds for common stock were to be considered, there would be no need for a test at all. All convertibles would be classified, by definition, as common stock equivalents'.⁸

In view of the difficulty of developing any criterion that can predict ultimate conversion with any degree of accuracy,⁹ *the simpler recommendation of SSAP 3 is a major virtue.*

II. Deficiencies in the standards

Exclusion of Anti-Dilution

In both SSAP 3 and Opinion 15 the second EPS figure is designed to show the maximum potential *dilution* and it is viewed as self evident that the computation should exclude those securities whose conversion or exercise would have the effect of increasing the earnings per share amount. Opinion 15 extends this 'no anti-dilution' rule to the inclusion of common stock equivalents in primary EPS.

³Werner G. Frank and Jerry J. Weygandt, 'Convertible Debt and Earnings per Share: Pragmatism vs. Good Theory', *Accounting Review*, XLV (April 1970), pp. 280–289.

⁴Thomas R. Hofstedt and Richard R. West, 'The APB, Yield Indices, and Predictive Ability', *Accounting Review*, XLVI (April 1971), pp. 329–337.

⁵Opinion 15, para. 25. See E. Hendriksen, *Accounting Theory* (Homewood, Illinois: R. D. Irwin, 1970), p. 553 for an assertion that the APB did not have in mind a predictive ability test.

⁶Op. cit., p. 332.

⁷Hofstedt and West, op. cit., p. 337.

³See the (non-mandatory) example in Appendix 1 of the 1972 version of SSAP 3.

⁴Dudley W. Curry, 'Opinion 15 vs. A Comprehensive Financial Reporting Method for Convertible Debt', *Accounting Review*, XLVI (July 1971), p. 491.

Neither standard makes it explicit why such an asymmetrical picture should be portrayed. Doubtless a desire for conservatism could be the reason why some accountants favour excluding anti-diluting securities.¹⁰ The main reason, in the UK, however, seems to be the belief that conversion or exercise is unlikely when the security has an anti-diluting impact on EPS.¹¹ SSAP 3 states: 'In these circumstances, it is likely that the conversion rights or options would not be exercised' (para. 22). The same reasoning lies behind the recommendation (in both standards) that fully diluted EPS should not be shown when the basic EPS is a negative figure (a loss).

The purpose of the present analysis is to *examine the relationship between conversion and anti-dilution and to show that in such a situation conversion can by no means be precluded*. We define:

- D = interest payments (£s) on the outstanding convertible debt
 r = current (market) rate of interest on equivalent debentures and loans
 PC = current market value of convertible
 M = number of existing equity shares
 N = new shares to be issued, if all holders convert
 E = profit available for the existing equity holders, if no conversion
 P = current price per equity share
 EY = current earnings yield on equity $\equiv \frac{E}{M.P}$
 SDV = value of convertible as straight debt $\equiv \frac{D}{r}$
 t = rate of corporation tax saved by paying interest.

Earnings per share after deducting tax and the interest on the convertible is

$$EPS = \frac{E}{M} \quad (1)$$

and earnings per share when the convertible is

treated as equivalent to equity is

$$EPS^1 = \frac{E + D(1-t)}{M + N} \quad (2)$$

It follows that $EPS^1 > EPS$ (anti-dilution) only if

$$\frac{D(1-t)}{N} > \frac{E}{M} \quad (3)$$

Or, put another way: anti-dilution will occur only if the net interest saved per new share issued is greater than current EPS.

Since it is clear that SSAP 3 intends the second EPS figure to indicate potential dilution of all future earnings, we must now specify a condition which will enable all future conversions to be eliminated. We shall then compare this specification with the case of anti-dilution to examine to what extent anti-dilution means no future conversion.

A necessary (but not sufficient) condition for conversion to take place is that the holders should regard the expected future cash streams from the convertible as inferior to the expected future cash streams from some other form of holding; the desire to get out of the convertible is thus related to each holder's risk preferences and expectations about the future. Should this condition be satisfied, conversion is *not* a logical consequence if

$$PC > N.P > SDV \quad (4)$$

or

$$PC = SDV > N.P \quad (5)$$

since then the holders would maximise their returns by selling the convertible (assuming no transactions costs). Only if

$$PC = N.P > SDV \quad (6)$$

would conversion take place. The choice between (4) and (5) for precluding future conversions is not difficult. If (4) were currently true, conversion in the future could not be precluded since PC tends to N.P as the conversion life expires.¹² If (5) were currently true *and* if this relationship holds throughout the conversion life, all future conversions could be precluded.

A. We shall initially, in order to promote the most favourable case for the SSAP 3 premise that 'anti-dilution means no conversion', assume that convertible holders have naïve expectations in that they do not anticipate the effect of their own actions on the firm's equity.

When $EPS^1 > EPS$ (anti-dilution), the interest payments from the convertible will exceed the

¹⁰Hendriksen, op. cit., p. 554 points out that in the case of warrants the EPS computation may be anything but conservative: '... actual dilution may be greater than that reported ...'. However, on balance he believes (p. 555): 'The computation, therefore, may reflect a worse position than is possible under any circumstances'.

¹¹See for example Ross Skinner, *Accounting Principles: A Canadian Viewpoint* (Toronto: The Canadian Institute of Chartered Accountants, 1972), p. 237: 'This [no anti-dilution] proviso was made because, if there is not such a "dilutive" effect, in all probability the holders of convertible securities, warrants, etc. would not find it advantageous to exercise their rights to acquire common stock and, therefore, publication of the higher earnings per share figure would be meaningless and possibly misleading' (emphasis added). We contest the accuracy of this statement.

¹²E. F. Brigham, 'An Analysis of Convertible Debentures: Theory and some Empirical Evidence', *Journal of Finance*, v. 21, (1966), pp. 35-54.

income for the holders if they were to convert, that is¹³

$$D > N \cdot \text{EPS} \quad (7)$$

Thus, there would be little incentive to hold the equity rather than the convertible. Even if this were not a sufficient condition to preclude conversion, the holder would not convert. This is shown as follows.

The situation of anti-dilution (3) may be re-written

$$\frac{D}{N} > \frac{E}{M} \cdot \frac{1}{(1-t)} \quad (3a)$$

The condition for exclusion of conversion (5) may be re-written

$$\frac{D}{N} > \frac{E}{M} \cdot \frac{r}{EY} \quad (5a)$$

By comparing (5a) with (3a), we can see that anti-dilution would necessarily imply no conversion if

$$\frac{1}{1-t} \geq \frac{r}{EY} \quad (8)$$

Since $t > 0$, then $\frac{1}{1-t} > 1$ and hence (8) will be clearly satisfied in situations of no growth expectations, since $\frac{r}{EY} < 1$ due to the risk differential

between debt and equity. This supports the SSAP 3 exclusion rule for anti-dilution situations.

However, when this artificial framework is removed the SSAP 3 premise, that anti-dilution means no conversion, is completely unsound.

Firstly, the current relationship (7) between the convertible income D and (if the holders were to convert) equity income from conversion $N \cdot \text{EPS}$ is not an efficient measure of the desire to acquire the firm's equity. If current earnings are temporarily depressed, then convertible holders (without being irrational) might wish to invest in the equity even though inequality (7) is currently satisfied. Furthermore (7) is an extremely artificial view of the choices open to investors. The choice is between the cash flow from the convertible and the cash flows from other forms of investment and not merely the same firm's equity. Thus, even if the interest payments from the convertible were

far in excess of the earnings from holding the equity, investors may still desire to transfer their assets out of the convertible.

Secondly, it can be shown that in anti-dilution situations inequality (8) will not necessarily be satisfied. This is an important result, for the logic implicit in the SSAP 3 rule is that even where convertible holders wish to own the firm's equity in preference to the convertible, inequality (8) will prevent any such desire from showing itself in conversion. The main reason why (8) may not be satisfied is that investors in general may have growth expectations about the earnings for equity.

For example, overall in January 1969 (8) was not satisfied:¹⁴

$\frac{1}{1-t} = 1.74$	$\frac{r}{EY} = 9.43\%$	$\frac{r}{EY} = 2.17$
	$\frac{r}{EY} = 4.34\%$	

In addition, even when the inequality (8) is satisfied overall because prospects for growth are poor, it does not necessarily follow that the relationship will also hold for each company. For example, overall in November 1974 (see footnote 14):

$\frac{1}{1-t} = 2.0$	$\frac{r}{EY} = 19.36\%$	$\frac{r}{EY} = 0.57$
	$\frac{r}{EY} = 33.85\%$	

The inequality was clearly operative and yet out of 69 quoted convertible issues there were 18 cases in which it was violated.

B. The above arguments against the SSAP 3 anti-dilution premise are strengthened when the assumption of naive investor expectations is relaxed, and replaced by one in which investors anticipate the effect of their own actions on the price of the firm's equity.

The condition for no conversion, previously (5), may now be written as

$$PC = SDV > N \cdot P^I \quad (5b)$$

where P^I reflects the earnings per share accruing to holders on the assumption that *all* holders convert. This condition is less likely to hold than

(5) since in anti-dilution situations $P^I = \frac{\text{EPS}^I}{EY}$ is

$$\text{greater than } P = \frac{\text{EPS}^{15}}{EY}.$$

If an individual holder believes that only a proportion, α , of investors desire to transfer their assets out of the convertible, the new earnings per share, EPS^{II} , upon which the holder will expect the new price, P^{II} , to be based is

¹³The proof of this is:

$$\text{anti-dilution restated: } \frac{D}{N} (1-t) > \frac{E}{M} \quad (3)$$

in which case it must be that

$$\frac{D}{N} > \frac{E}{M}$$

so

$$D > N \cdot \frac{E}{M} \text{ and } D > N \cdot \text{EPS}$$

¹⁴Bank of England Quarterly Bulletins, 'UK Security Yields'.

¹⁵In addition, the excess in (7) will now be smaller since EPS is replaced by EPS^I .

$$EPS^H = \frac{E + a \cdot D \cdot (1-t)}{M + a \cdot N} \quad (2a)$$

Since $P^I > P^H > P$, conversion in this situation is less likely to take place than in (5b) but still more likely than in the case with naïve investor expectations (5).

c. The previous arguments have assumed no transactions costs. When these are introduced, the condition for no conversion, previously (5), becomes (with naïve expectations)

$$PC = SDV > N \cdot P + TC \quad (5c)$$

where TC = transactions costs of selling the convertible for SDV and purchasing the firm's equity shares in the market (summed across all holders). The inequality, previously (8), which would necessitate no conversion in an anti-dilution situation, now becomes

$$\frac{1}{1-t} \geq \frac{r}{EY} \left(1 + \frac{TC}{N \cdot P} \right) \quad (8a)$$

Since $TC > 0$, the inclusion of transactions costs further reduces the likelihood that anti-dilution necessarily implies no conversion.

Warrants

An important feature of a warrant stems from the fact that if subscription occurs the cash resources available to the firm increase, unlike convertibles which provide the firm (at the time of conversion) with no new resources. Therefore, it is necessary to impute some yield to the cash flow from the warrant 'subscription'. SSAP 3 chooses the yield on $2\frac{1}{2}\%$ Consolidated Stock.

The exclusion of anti-dilution situations also applies to warrants. Using the method developed above it can easily be shown that subscription cannot be precluded in cases of anti-dilution. Briefly, using additional definitions

Y = yield on $2\frac{1}{2}\%$ Consolidated Stock

S = subscription price per share,

it follows that

$$EPS^I = \frac{E + S \cdot Y \cdot N}{M + N} \quad (2b)$$

and anti-dilution ($EPS^I > EPS$) will occur if

$$\frac{S \cdot Y \cdot N}{N} > \frac{E}{M}$$

or

$$S > \frac{E}{M} \cdot \frac{1}{Y} \quad (3b)$$

Subscription may be precluded if

$$S > P$$

or

$$S > \frac{E}{M} \cdot \frac{1}{EY} \quad (5d)$$

The necessary condition for anti-dilution to mean no subscription is

$$\frac{1}{Y} \geq \frac{1}{EY}$$

or

$$Y \leq EY \quad (8b)$$

It would be easy to illustrate (see footnote 14) that there have been long periods when this condition has not been satisfied, and that, even when it is satisfied in general, the relationship still may not hold for any particular firm. This discussion has been terse because we believe that the treatment of warrants, in both dilution and anti-dilution situations, suffers from a far more serious defect and that because of this they should be excluded from all earnings per share calculations.

This major problem area is, not surprisingly, the yield (on $2\frac{1}{2}\%$ Consolidated Stock!) which is imputed to the proceeds from the 'subscription'. *The treatment is quite meaningless.*

We venture to predict that this is the one course of action a company management would *not* follow. If a major cash inflow occurred, the proceeds might be used to extinguish debt, to bring down costly overdrafts, and perhaps even to undertake investment projects.

To impute investment in $2\frac{1}{2}\%$ Consolidated is to distort the current earnings, assets and risk picture of the company. The risk distortion is particularly undesirable: earnings from $2\frac{1}{2}\%$ Consolidated will be far less risky than the 'normal' earnings of the business. After all, convertibles and warrants are 'hedging' instruments designed to make investment in what are often high-growth, high-risk firms attractive to a less gambling-orientated type of investor. What is the point of distorting EPS to such an extent, just so that a single-valued fully diluted EPS figure (which will not be too subjective for the profession's taste) can be provided to the market? What real use is such a figure?

We recommend that warrants not be included in the fully diluted EPS calculation. After all, there is no logical reason why it should not be assumed that the imputed cash proceeds would yield the same return as the existing capital, which would leave $EPS^I = EPS$.

The American standard avoids part of the difficulties of the British standard by its assumption that at least the first part of the imputed proceeds be treated as having been used to purchase the company's own shares in the market. This assumed purchase of 'treasury stock' has the advantage of not altering the assets and earnings structure of the firm; hence not its risk. But as in Britain a company is not

allowed to purchase its own shares, this method of computing EPS is not available.

III. Conclusions

The reason why accountants now prepare EPS figures is to provide investors with more useful summarised statistics of a firm's performance. This is to be applauded. Unfortunately, it has led accountants to stray into an area which should remain the province of the stock market: to calculate what will happen to EPS if investors do this or do that.

We feel that firms should not try to predict how the market is going to behave when deciding how to report EPS data. Investors' decisions, including the decision to convert or to exercise a subscription option, will depend in part on the information provided to them in published accounts. If firms in turn try to forecast the likelihood of such market actions, there will be a complete circularity in information flows.

For this reason we do not believe that the 'predictive ability' tests advocated by Frank and Weygandt¹⁶ and Hofstedt and West¹⁷ will be of any use in deciding how 'best' to deal with convertibles in EPS calculations, no matter how sophisticated the predictive models used. The cause of the problem is that investors have a built-in incentive to outdate the latest predictive models. As Granger and Morgenstern observe,¹⁸ the (pricing) efficiency

of the stock market is such as to bring about the fairly swift destruction of any model of its behaviour.

The fact that APB 15 and SSAP 3 do not involve anything which can be described as a prediction model is no comfort. As we have shown in this paper, the exclusion of anti-dilution situations only makes sense if some kind of low-level prediction of conversion is implied; and this prediction is not reliable.

Although we have not addressed ourselves to the problem of defining 'common stock equivalents' as APB 15 requires, our mathematical analysis suggests that no simple guide lines are likely to be effective in predicting future conversions.

We recommend dual presentation: basic EPS as in Britain and not the estimation of common stock equivalents as in the US; fully converted EPS including anti-dilutions, but excluding warrants. Not only will this result in more meaningful earnings per share disclosures but it will simplify the accountant's job – an all too rare consequence of academics' suggestions for improving corporate reporting.

¹⁶Op. cit.

¹⁷Op. cit.

¹⁸Clive W. J. Granger and Oskar Morgenstern, *Predictability of Stock Market Prices*, Lexington, Mass.: Heath Lexington, 1970), chapter 11 contains a clear statement of the difficulties of doing anything more than provide a descriptive (as opposed to predictive) model of share price behaviour.

Linking Internal Control and Substantive Tests: A Note

David Hatherly

The strength of internal control and other non-sampling evidence is widely used as a factor determining the sample design of substantive tests. The problem is how should the link be effected? This note reviews various possibilities and in particular suggests that a combination of Bayes' Theorem and Monetary Unit Sampling provides the most promising approach.

Arbitrary variation

It appears that arbitrary variation of confidence levels of a sample design depending upon the evaluation of internal control is widely used in practice. Willingham and Carmichael¹ suggest the following arbitrary relationship:

Relationship of internal control effectiveness to reliability

<i>Evaluation of internal control</i>	<i>Confidence level</i>
Excellent	75%
Good	90%
Fair	95%
Poor	99%

A more cautious example is given in the Arthur Young Journal²:

Evaluation of internal controls

	<i>Excellent</i>	<i>Fair</i>	<i>Weak or non-existent</i>
Confidence level	80 to 90%	95 to 99%	97.5 to 99%

A third example is related by McRae³:

<i>Evaluation of internal control system</i>	<i>Confidence level</i>
Very good	63%
Average	86%
Rather poor	95%

This table is linked to Monetary Unit Sampling as follows:

<i>Confidence level</i>	<i>Confidence factor</i>
63%	1.0
86%	2.0
95%	3.0

It is felt to be imprudent, even when internal control is excellent, to select a confidence level giving a confidence factor of less than 1. If the confidence factor is less than 1, the sampling interval is greater than the maximum potential error and it is possible for a material item to be untested. Although there is reasoning behind the suggestion it is essentially an arbitrary approach. All arbitrary approaches can be criticised on two grounds:

1. What is meant by an 'excellent' system of internal control, a 'good' system, etc.? A system which allows a 10% probability of material error might be regarded as 'excellent' by one person but only as 'good' by another. If the purpose of the arbitrary approach is to promote conformity within a firm (albeit uniform application of an arbitrary procedure) then it could fail because of the subjective nature of the terms 'excellent', 'good' etc.
2. The linking of internal control evaluation and confidence level is not only arbitrary but is also a

¹J. J. Willingham and D. R. Carmichael, *Auditing Concepts and Methods* (McGraw-Hill, 2nd edition, 1975), p. 166.

²J. C. Broderick, 'Statistical Sampling', *Arthur Young Journal* (Autumn/Winter 1972/73), p. 40.

³T. W. McRae, *Statistical Sampling for Audit and Control*, (Wiley, 1974), p. 203.

relationship with no direct linking and, therefore, a difficult relationship for the auditor to visualise.⁴

AICPA's statement on auditing standards

The AICPA⁵ have suggested that internal control and confidence levels for substantive tests can be linked according to the mathematical law of joint probability:

<i>Probability of internal control allowing material error</i>	<i>Confidence level</i>	<i>Overall confidence</i>
70%	93%	95%
50%	90%	95%
30%	83%	95%
10%	50%	95%

For illustrative purposes, an overall confidence level of 95% is used. The AICPA procedure gives an overall confidence which is consistent with both the subjective assessment of internal control and the objective evaluation provided by the substantive test. In this respect it may be regarded as a Bayesian approach.

As internal control improves and the prior probability of material error decreases, the required confidence level for substantive tests becomes increasingly sensitive to shifts in the internal control evaluation. This can be demonstrated as follows:

i = probability of internal control allowing material error

s = confidence level for substantive test

$$i(1 - s) = 0.05$$

differentiating with respect to i

$$1 - i \frac{ds}{di} - s = 0$$

$$\text{but } s = \frac{i - 0.05}{i}$$

$$\therefore \frac{ds}{di} = 1 - \frac{\left[\frac{i - 0.05}{i} \right]}{i} = \frac{0.05}{i^2}$$

Thus,

i	$\frac{ds}{di}$
0.7	0.10
0.5	0.20
0.3	0.55
0.1	5.00

Because of this sensitivity, it is vital that the prior probability chosen is an adequate description of the auditor's subjective evaluation of internal control. However, it is unlikely that auditors can confidently express their evaluation of internal control in terms of a single prior probability of material error. A far better approach is to describe the subjective evaluation by means of a prior probability distribution.

Bayesian approach

Formulating a prior probability distribution is the first step in the Bayesian approach. In table 1 the probabilities are those of internal control allowing the respective population overstatements:

TABLE 1
Prior Probability Distribution
Reported value: £1m

<i>Overstated by</i>	<i>Probability</i>
£10,000	0.2
20,000	0.5
30,000	0.1
40,000	0.1
50,000	0.1

The subjective prior probability distribution and objective sample result can be combined using Bayes Theorem and Monetary Unit Sampling to give a posterior probability distribution in money terms. In general, Bayes Theorem states:

$$p(H_i/E) = \frac{p(H_i) p(E/H_i)}{p(E/H_1)p(H_1) + p(E/H_2)p(H_2) + \dots + p(E/H_k)p(H_k)}$$

Where H = Set of all possible states of nature
 E = Result of experiment
 $p(H_i/E)$ = Probability of state i given E has occurred
 $p(H_i)$ = Probability of state i occurring
 $p(E/H_i)$ = Probability of the event E occurring given that state i exists.

Monetary Unit Sampling is a technique which uses attribute sampling on monetary populations.⁶ The

⁴See K. A. Smith, 'The Relationship of Internal Control Evaluation and Audit Sample Size'. *Accounting Review* (April, 1972), pp. 260-69.

⁵AICPA, Statement on Auditing Standards No. 1, Section 320, Appendix B, paragraph 35.

⁶See R. Andersen and A. D. Tietlebaum, 'Dollar Unit Sampling: A solution to the audit sampling dilemma', *Canadian Chartered Accountant* (April, 1973), pp. 30-39.

trick is merely to define the sampling unit in the population not as being an individual invoice or individual receivable balance, but as being an individual pound.⁷ Monetary Unit Sampling is most suited for testing overstatements and when testing understatements it is frequently necessary to find a 'reciprocal' population. Another complication relates to the treatment of partial errors. For convenience, therefore, the illustration (table 2) assumes a random sample of 100 pounds to give 1 error which is a 100% overstatement. The resulting posterior distribution (table 2) can be interpreted as follows:

The auditor is 95.7% confident that the maximum potential overstatement is £30,000.

The auditor is 98.7% confident that the maximum potential overstatement is £40,000
etc.

Feasibility of the Bayesian Approach

Corless⁸ conducted an experiment to examine the prior probability distributions of auditors and he identified a number of problems. Firstly, auditors were 'externally' inconsistent in the sense that given the same system of internal control, different auditors' probability distributions varied widely. He also found 'internal' inconsistency in the sense that the same auditor would give different probability distributions depending on the technique used to elicit the

probabilities. Thirdly, Corless is sceptical of the value of the Bayesian approach when the sampling evidence contradicts the non-sampling evidence. In such cases the auditor is likely to lose confidence in his priors and should, in general, resolve the uncertainty by extending the sample:

It may be that the judgementally revised distributions are a better reflection of the meaning of the audit evidence than the Bayesian revised distributions when the sampling evidence contradicts the non-sampling evidence. That is, it seems rational that as an auditor obtains evidence which contradicts other evidence he has obtained, he becomes less certain as to what the error rate is . . .⁹

Conclusion

There is a need for more research, along the lines of Corless' experiment, on the subject of auditors' subjective probabilities. Corless investigated probability distributions resulting from a case study of internal control. In practice there are likely to be other significant influences upon auditors' subjective probabilities apart from internal control. In particular, annual audits should not be regarded as a series of independent events but as a single continuing engagement essentially uninterrupted in character, with an expression of opinion submitted annually.¹⁰

⁷Ibid, p. 34.

⁸J. C. Corless, 'Assessing Prior Distributions for Applying Bayesian Statistics in Auditing', *Accounting Review* (July, 1972), pp. 556-66.

⁹Ibid, p. 565.

¹⁰A. C. Tietjen, 'A Suggested Change in Examination Approach', *Journal of Accountancy* (April, 1956); reprinted in Brasseaux and Edwards, *Readings in Auditing* (South Western Publishing, 1973), p. 201.

TABLE 2
Bayes Theorem and Monetary Unit Sampling

(Hi)	Priors $p(Hi)$	$p(E/Hi)$	$p(E/Hi)p(Hi)$	Posteriors $\frac{p(E/Hi)p(Hi)}{\sum p(E/Hi)p(Hi)}$
Overstated by £10,000	0.2	0.3697	0.07394	0.3156
20,000	0.5	0.2707	0.13535	0.5781
30,000	0.1	0.1471	0.01471	0.0628
40,000	0.1	0.0703	0.00703	0.0301
50,000	0.1	0.0312	0.00312	0.0134
	1.0		0.23415	1.0000

$p(E/Hi)$ is derived from the binomial distribution.

0.3697 is the probability of 1 error in a sample of 100 given a population error rate of $10,000/10^6 = 0.01$ etc.

The previous year's posterior distribution, itself a combination of past subjective feelings and sample results, is likely to be a significant influence on any current year priors.

This influence might well be a stabilising one, tending to reduce internal and external inconsistencies and increase confidence in the prior probabilities. To facilitate this approach a schedule of previous years'

priors and posteriors would be kept on the current audit file and explanation of changes between last year's posteriors and this year's priors would be given.

Provided ways can be found of developing prior probability distributions in which auditors can have confidence, the combination of non-sampling and sampling evidence by means of Bayes Theorem and Monetary Unit Sampling is most promising.

Oil Company Accounting: Not So Comparable? A Reply

Kenneth S. Most

In taking issue with the conclusions, albeit tentative, of my paper 'A Comparative Study of the Accounts of Seven Major Oil Companies',¹ Mr. J. H. Trueman writes:²

'This is a startling and quite unexpected result. It implies that the controversy which has raged during recent years regarding the inconsistencies in accounting treatment for transactions of an essentially similar nature has been futile, and further implies that any movement towards greater uniformity in accounting principles and presentations within the oil industry will not result in more meaningful financial statements.'

With great respect, it implies nothing of the kind. I have exposed my favourable attitude to accounting uniformity in great detail elsewhere,³ and am currently engaged in research aimed at eventually leading both

U.S. and European oil companies gently along this path. Although startling and unexpected, however, the observation that the full cost versus successful efforts controversy is fundamentally trivial is a point well worth making, particularly at a time when the accountancy bodies of the English-speaking world are so immersed in trivia that great opportunities to be of service to mankind are going begging.

As it happens, Texaco Inc. has provided us with some belated evidence in its 1974 Annual Report. Whether Texaco's accounting methods lean more toward successful efforts or full cost, it does practice full costing and has represented the arguments in favour of full costing before various investigatory bodies; it is relevant to point out that the 1974 *Report on Certain Petroleum Industry Accounting Practices* of the Division of Finance and Accounting of the American Petroleum Institute failed to include Texaco in its sample, *et hoc genus omne*.

In its 1974 annual report, Texaco has presented a comparative study of the effects of accounting for exploratory costs on its (modified) full costing basis with the effects of expensing these costs including all dry holes (pp. 39-40). The table illustrating these effects is reproduced below:

Year ended December 31	Full cost accounting	Deferment of tax effect on drilling costs	Total net earnings effect	Per cent of earnings reported
1974	\$46.6	\$(59.4)	\$(12.8)	(.8)
1973	38.1	(48.3)	(10.2)	(.8)
1972	69.1	(39.3)	29.8	3.4
1971	56.4	(21.5)	34.9	3.9
1970	53.4	(23.5)	29.9	3.6
1969	67.4	(32.4)	35.0	4.5
1968	40.3	(12.0)	28.3	3.5
1967	41.5	(15.3)	26.2	3.5
1966	58.3	(24.4)	33.9	5.0
1965	39.9	(18.1)	21.8	3.7
Prior years	95.2	(326.9)	(231.7)	
Total	\$606.2	\$(621.1)	\$(14.9)	

¹Kenneth S. Most, 'A Comparative Study of the Accounts of Seven Major Oil Companies', *Accounting and Business Research*, No. 16, Autumn 1974, pp. 242-250.

²J. H. Trueman, 'Oil Company Accounts: Not So Comparable?', *Accounting and Business Research*, No. 18, Spring 1975, pp. 127-132.

³Kenneth S. Most, *Uniform Cost Accounting*, Gee & Co., 1961.

When the ratio of earnings reported to either total revenues or total assets is considered, I seriously doubt whether differences of the magnitude revealed by the last column are material.

A note on methodology

Mr. Trueman bases his different conclusions on a comparative study which he has carried out using two of the companies in my sample (Gulf and Texaco), two other U.S. companies (Mobil and Tenneco) and two European companies (Royal Dutch Shell and BP).

I initially surveyed a much larger sample of companies than the seven with which I finished. Mobil was dropped because it displayed identical characteristics, both in terms of accounting policies and calculated ratios, with another company, and I decided that I was not engaged in counting heads. Tenneco was dropped because it is a conglomerate in the truest sense of the word and, therefore, the figures it reports say nothing in particular; this is one of the many communications problems which conglomerates face and one of the reasons why their securities have been out of favour for some years. I tried to find sufficient common features between BP, Royal Dutch Shell and the other companies surveyed to justify their inclusion in my study, but eventually gave up the task, and having renounced the usefulness of their figures *for this purpose* I decided to pursue further research on the form and content of European oil companies' financial statements before attempting a comparison. This research has recently been reported and is being continued,⁴ but it is already apparent that the full cost versus successful efforts controversy is largely irrelevant to European oil companies, which tend to amortize pre-production costs on a time basis rather than a unit of production basis. It is worthy of mention here that the accountants of Royal Dutch Shell in response to a direct question, denied the relevance of the full cost/successful efforts dichotomy to their capitalization policy, although the unit of production method of calculating depletion expense is used by parts of the group.

The ambiguity of the notes

Mr. Trueman draws attention to the ambiguity of the notes to the financial statements of oil companies insofar as they purport to deal with this question. Indeed, to examine these notes in the light of known

differences in accounting practices is a salutary experience for those who, in the name of disclosure, call for an expansion of this section of the financial statements in annual reports.

The 1974 Report of the American Petroleum Institute previously referred to sheds some light on the divergent practices which these notes conceal, albeit without identifying them with specific companies and it is salutary again to remember that the companies surveyed did not include any 'known full costers'. In this connection, I am in the process of reviewing a survey of an extensive sample of companies which seeks to identify more clearly the nature of these alternative practices; it is already apparent that the possibility of drawing meaningful conclusions from the summary statements in the notes to financial statements is severely restricted.

The complexity of the situation, as Mr. Trueman points out, is a combined function of both capitalization and amortization (*vide* depletion) policy. My original point is that the result of these choices, in the case of a mature company, is indeterminate. Although the figures in Mr. Trueman's Table 2 are not wholly self-explanatory, it does seem strange that a 'successful efforts' company such as Gulf should capitalize 75% of its exploration expense, in the light of the well-publicized ratio of success to total effort in this field. I remain convinced that *a priori* reasoning from disclosures of accounting policies to effects on financial statements is illegitimate even where both capitalization and amortization policies are allowed their combined effect.

The fact that this is so does not necessarily invalidate the use of primitive methods of financial analysis, although it may severely restrict the extent to which refined statistical techniques can make use of the accounting data. Nor is this conclusion unique to the subject under discussion; it is well known, for example, that such apparently different depreciation methods as straight line and reducing balance tend to the same result for companies having regular and substantial equipment renewal programmes.

A difference of interpretation

The key to understanding Mr. Trueman's different approach to this problem lies in his statement on p. 131:

'For instance, the \$7,849 m. in net fixed assets in Texaco's balance sheet is not the qualitative equivalent of the \$5,418 m. in net fixed assets in Gulf's balance sheet. Texaco's fixed assets include all exploration and development costs except U.S. lease rentals and all (or possibly only U.S.) dry hole costs: Gulf's fixed assets include exploration

⁴Kenneth S. Most, *Financial Reporting by the Oil and Gas Industry in Europe*, Texas A & M University, November 1974.

and development costs less all survey costs, all delay rentals, all dry hole costs, and any other items not directly attributable to productive operations.'

A balance sheet does not reveal equipment, it reveals the *cost* of equipment; an income statement does not disclose depreciation, it discloses depreciation *expense*. Both cost and expense are subjective; as Von Bülow once wrote: 'price is a reality, cost is a concept'. My primitive form of ratio analysis simply attempts to establish a relationship in terms of magnitude between two propositions, both of which are equally valid even though they emanate from philosophically opposed sources. I believe that this is sound theory and that inferences may validly be drawn from such comparisons.

Conclusion

I realize that some financial analysts attempt speculatively to recast financial statements in the light of assumed differences resulting from different accounting methods. Others investigate the effects of these accounting choices by eliciting direct responses from the companies concerned. There are many ways to use the product of the accountants' art and I am continually surprised by the ingenuity which some scholars reveal in their contributions to the accounting literature. I do not believe, however, that comparability implies uniformity; uniformity aids comparability by making the data to be compared suitable for the application of a wider range of statistical methods.

The Comparability of Oil Company Accounts: A Comment

R. C. Morris

Introduction

In recent editions of this journal Kenneth Most¹ and John Trueman² have argued whether or not the use by major oil companies of different accounting practices makes it unrealistic to compare their financial statements. Each based his observations on the accounts of seven major concerns. As previously, when examining company accounts prepared in different European countries,³ Most concludes that general inter-firm comparisons, concerning such matters as solvency, profitability and stability of earnings, are possible, despite the variety of accounting methods used. In reply, Trueman devoted himself to a study of the impact of applying different methods of accounting for exploration and development costs – ‘the single most important source of difference between the accounting systems of oil companies’ – and concludes that the variety of accounting treatments used renders a comparative analysis of oil company accounts ‘exceptionally difficult’.

Unfortunately neither Most nor Trueman specifies for whose benefit they think the accounting information is produced – which makes it somewhat difficult to evaluate their comments. However, it appears both have in mind the need of investors and others to be able to assess past performance in an economically meaningful manner. They are fairly clearly not concerned with any question of trying to determine tax liability or of establishing the maximum amount at law which can be distributed as dividend.

The writer of this comment has in fact had first hand experience of attempting to assess performance of companies in the extractive industries. As regards the oil industry in particular, this was gained some years ago when conducting a research project commissioned by the government of an OPEC country, the aim of which was to determine whether or not the profit rates of operating companies were ‘excessive’. It was apparent then that the accounts of oil companies are even less helpful than financial statements of companies operating in other industries in enabling an analyst to assess performance in any economically meaningful way. This was true, in fact, even though in that particular instance all the accounts were prepared on a uniform basis – which merely underlines the fact that standardisation of itself cannot cure the defects of conventional accounts. More specifically, where cost savings are netted off the depreciation/depletion charge, profit figures are clearly likely to be misleading as performance indicators. The only remedy is to ensure that the figures produced correspond more closely to the underlying economic realities.⁴

In these circumstances, it is insufficient merely to discuss the impact of applying different accounting conventions, as Most and Trueman seem to have done, and it is the purpose of this comment to explore in general terms the particular problems of financial reporting for firms operating in the extractive industries.

Profit recognition criteria

Over the years it has become accepted that there are peculiar problems involved in reporting the financial affairs of companies in the mining and oil sectors.

¹K. S. Most, ‘A Comparative Study of the Accounts of Seven Major Oil Companies’, *Accounting and Business Research*, No. 16, Autumn 1974, pp. 242–250.

²J. W. H. Trueman, ‘Oil Company Accounts: Not so comparable?’, *Accounting and Business Research*, No. 18, Spring 1975, pp. 127–132.

³K. S. Most, ‘How Bad are European Accounts?’, *Accountancy*, Vol. 75, 1964, pp. 9–15.

⁴Cf. the arguments put forward by A. F. Smith, ‘Oil Production and Accounting in the Extractive Industry’, *Abacus*, Vol. 10, 1974, pp. 100–110.

This fact has been witnessed by the publication of a number of specialist texts,⁵ and more recently by the AICPA's sponsorship of a research study on the subject.⁶ It is therefore as well to establish these special circumstances at the outset. Usually it is argued that a major problem concerns the measuring entity: should it be the individual mine or well, a general location or the group overall? For the purpose in hand, however, it will be more instructive to concentrate on the central issue of income measurement, and on the *timing* of profit recognition in particular.

With different concepts of income, profit can be recognised at various points in time. At one extreme of the time spectrum it is recognised only when the cash proceeds from sales are received; while at the other, profit is recognised immediately in line with changes in the subjective values of the owner. In between are various possible recognition criteria, most obviously at the point-of-sale where an external transaction occurs. (The transaction, of course, involves either a cash receipt or the creation of a legally enforceable debt.)

As the AAA noted in 1965, for financial reporting purposes most accountants, academic or practising, apply a point-of-sale criterion.⁷ However, 'cash received' is used in some instances, particularly for calculating taxable profits (e.g. in the accounts of barristers). At the other extreme, the subjective value approach is inevitably applied for internal decision-making purposes where budgeting methods are employed. The most obvious example is in the application of DCF techniques for capital investment appraisal purposes, but another at a more elementary level arises when a partnership is reconstituted. It is then usual to abandon the conservative 'lowest-common-denominator' balance sheet and instead

calculate a going concern value for the business using an earnings multiplier. However, in one specific instance the subjective value criterion is used for external financial reporting purposes (albeit in a slightly modified 'conservative' form) – namely, in the life assurance and pensions industry.

The conventional point-of-sale recognition criterion may, of course, be applied in several different ways. The current cost school of writers, exemplified by Edwards and Bell,⁸ suggests the resources sacrificed in securing sales in any particular period should be measured in terms of their current (input) costs; while the conventional approach, of course, is merely to match the historic cost of inputs consumed against sales revenue – though in practice there are minor adjustments to this 'rule'.

Proponents of current cost accounting accept that their objective approach does not measure changes in the subjective values of the owners. Thus if they should become more optimistic over a period, such a gain in subjective value goes unreported and unrecognised, in sharp contrast to the Hicksian capital maintenance income concept.⁹ However, it seems to be suggested that for most businesses the difference between the subjective (or even objective¹⁰) going concern values and the current cost of resources owned will not be enormous, largely because of adjustments brought about by the action of market forces. Thus, if there were to be a sudden shift upwards in the demand curve for a company's product, this might be expected to be reflected fairly quickly in holding gains for the resources owned – particularly if the assets are specific in nature – as the factor owners cream off the rent element of 'income' for themselves. Moreover, part of the benefit would be recognised in larger operating profits resulting from higher selling prices and/or increased sales volume. In this way one might expect that what has been termed 'subjective goodwill'¹¹ would be converted into recognised profit in a fairly short space of time.

The peculiarity of firms operating in the extractive industries is that one of their main objectives is to discover mineral reserves – a point clearly brought out by Field.¹² Naturally, if they are successful it will frequently be found that the owners' subjective

⁵E.g. with regard to oil, R. H. Irving and V. R. Draper, *Accounting Practices in the Petroleum Industry*, Ronald Press, New York, 1958; C. A. Smith and H. R. Brock, *Accounting for Oil and Gas Producers*, Prentice-Hall, Englewood Cliffs, N.J., 1959; S. P. Porter, *Petroleum Accounting Practices*, McGraw-Hill, New York, 1965; R. E. Waller, *Oil Accounting: principles of oil exploration and production accounting in Canada*, Canadian Institute of Chartered Accountants, Toronto, 1956; W. B. Coutts, *Accounting Problems in the Oil and Gas Industry*, Canadian Institute of Chartered Accountants, Toronto, 1963; F. K. Alfredson, *A Study of Some Accounting Problems in the Oil Industry*, University of Queensland Papers, Dept. of Accountancy, Vol. 1, No. 1, 1964; R. Lourens and S. Henderson, *Financial Reporting in the Extractive Industries: An Australian Survey*, Australian Society of Accountants, Melbourne, 1972.

⁶R. E. Field, *Financial Reporting in the Extractive Industries*, Accounting Research Study 11, American Institute of Certified Public Accountants, New York, 1969.

⁷American Accounting Association, 'The Realization Concept', *Accounting Review*, Vol. 40, 1965, pp. 312–322.

⁸E. O. Edwards and P. W. Bell, *The Theory and Measurement of Business Income*, University of California Press, Berkeley, 1965.

⁹J. R. Hicks, *Value and Capital*, 2nd ed., Clarendon Press, Oxford, 1946, ch. 14.

¹⁰i.e. market determined.

¹¹Edwards and Bell, op. cit., ch. 2.

¹²Field, op. cit., ch. 2, and especially Table 3, p. 12.

values are far in excess of even the current cost of the physically identifiable assets acquired for discovering and developing mineral deposits. Moreover, the 'subjective goodwill' which exists is only gradually translated into holding gains and operating profits over a very long period. Profit recognition can only be accelerated if the market value of an oil field or mine is incorporated in the accounts, but such a value is not easily obtainable and anyway presumably represents the subjective value of the next most optimistic potential owner.

Indeed, there are several clear examples in the recent past where published profit figures have been poor surrogates of economic performance over a particular period. Thus in the years 1968-1970 BP was in the process of discovering huge oil and gas deposits on the Alaskan north slope, yet its accounts for the years in question contained no direct indication of the rise in the company's fortunes. Even now, in fact, all that can be seen in the financial statements is the accrual of development expenditure by the Sohio associate.

In these circumstances, it seems there is a strong *prima facie* case for suggesting that mining and oil producing companies should consider publishing in their annual reports supplementary accounting statements indicating either a point estimate or a range of subjective valuations related to their proven reserves. Such assessments are used for internal managerial purposes, and in taking this step the companies would merely be following the example of the insurance industry in publishing the triennial actuaries' report. Moreover, the idea of including supplementary statements to the conventional accounts in annual reports is now gaining ground.¹³

Nevertheless, only a few writers have discussed the use of a 'discovery value' approach for external financial reporting purposes by companies operating in the extractive industries, and even fewer have advocated it.¹⁴ Yet the concepts involved are very

similar to those discussed in more general terms in the 1930s by Hicks,¹⁵ and by Sir Ronald Edwards.¹⁶ Moreover, unless the discovery value approach is used, there is an acute danger that the accounts of oil and mining companies by themselves (even incorporating current costs of the conventionally identified physical assets) will be next to useless in indicating performance.¹⁷

The valuation of reserves

It might be suggested that it would be sufficient to require companies in the extractive industries merely to disclose their proven reserves in physical terms – a practice many already observe anyway.¹⁸ However, it is far from easy to interpret such data. For instance, what exactly is regarded as 'proven' is a matter of judgment, even though geologists (like accountants!) usually deliberately err on the side of conservatism. Moreover, operating characteristics in the extractive industries are such that it is extremely difficult for an uninformed outsider to place realistic values on reserves.¹⁹

A major factor is naturally the expected selling price of the mineral, and this can change considerably. Thus a fourfold increase in phosphate prices in 1974/75 by the world's major exporters has raised the quantity of economically viable reserves quite

73-84). The strongest advocates appear to be W. A. Paton and A. C. Littleton, *An Introduction to Corporate Accounting Standards*, American Accounting Association, Evanston, Ill., 1940, pp. 28-29; and, more recently, F. K. Alfredson, *op. cit.*, pp. 25-28; A. F. Smith, *op. cit.*; and J. E. Connor, 'Discovery Value – the Oil Industry's Untried Method', *Journal of Accountancy*, Vol. 139, May 1975, pp. 54-63.

From the written submissions and oral evidence given to the APB (*APB Public Hearing on Accounting and Reporting Practices in the Petroleum Industry*, Arthur Andersen and Co., Chicago, 1972) it is fairly clear that analysts have to assess reserve values in their deliberations. However, many seem to be somewhat suspicious of the subjective discovery value approach – more so, in fact, than members of the APB's Committee on Extractive Industries, who gave one witness the impression that they were recommending the abandonment of the traditional balance sheet! (p. 78). Leonard Spacek of Arthur Andersen also indicated to the Board his firm's underlying support for the approach (p. 198). (See *APB Public Hearing*, pp. 45-80, 131-135, 161-165, 188-194, and the related submissions, esp. pp. 408, 412, 498, 514, 528, 741-2).

¹⁵Hicks, *op. cit.*

¹⁶R. S. Edwards, 'The Nature and Measurement of Income' (1938) in *Studies in Accounting Theory*, ed. W. T. Baxter and S. Davidson, Sweet and Maxwell, London, 1962, pp. 70-125.

¹⁷This is recognised in the industry – see Smith and Brock, *op. cit.*, p. 75.

¹⁸See Field, *op. cit.*, pp. 136-143, especially Table 3, p. 142.

¹⁹This is recognised by Coutts, *op. cit.*: see his suggestions for supplementary disclosure, p. 47.

¹³The following are examples in the UK context: CPP accounts, information concerning the current value of property, segmental activities, lists or analyses of major investments, etc. Other instances are the publication of profit forecasts in prospectuses or merger documents, and the inclusion of supplementary current cost data with the accounts of bodies responsible to the National Ports Council.

¹⁴Thus Coutts (*op. cit.*, p. 15-21) reluctantly rejects the approach, even though he accepts its underlying validity. Likewise, Field recognises the importance to investors of what he describes as "off-balance sheet" assets' (*op. cit.*, p. 138), but merely recommends that quantities be disclosed together with information on operating activities. Even Foster, in his penetrating criticism of Field's study, does not specifically propose the adoption of the 'discovery value' approach (G. J. Foster, 'ARS No. 11: Historical Cost Without Perspective', *Abacus*, Vol. 7, 1971, pp.

dramatically. Another aspect of particular importance is the degree of mineral content, which varies considerably. With oil the specific gravity is of special significance, the light crudes of the North African fields serving rather different markets from the heavier tar-yielding oils of South America.

On the expenditure side of the equation, recovery and transport costs also vary widely from one ore body to another, or from one well to another. On the production side in the mining sector there are considerable differences in the costs of operating opencast or underground workings; while in the oil industry the need to maintain pressure in some fields by using gas or water injection is a far from negligible cost. An additional problem is that it is common to find joint products are being produced – e.g. natural gas and condensate, lead and zinc, or even different grades of ore. In these circumstances internal management has to be especially careful in applying marginal costing and shadow pricing techniques rather than just referring to overall average costs. In particular, it is usual to have to lift low grade ore in order to exploit higher grade seams, yet with washing and other beneficiating techniques it is often possible to upgrade the poorer quality offtake at a low incremental cost.

As regards transport, this aspect is frequently crucial in determining the value of mineral reserves. Recently, for instance, Mediterranean crude has enjoyed nearly a \$1 per barrel premium over Gulf crude because of its closer proximity to the important West European and North American markets. Similarly, there are many instances of sizeable mineral discoveries being made at inaccessible locations, thus making their exploitation uneconomic.

It should be clear from what has been said above that to evaluate reserves one has not merely to estimate future rates of offtake and selling prices, but also the production and transport costs for each individual site. Such a procedure is quite beyond an outside analyst, just as it is impossible for him to appraise the position of an insurance company, even when he is giving data about the number of policies outstanding, etc. Yet oil and mining companies themselves evaluate their positions for internal purposes, applying programming²⁰ and simulation

models,²¹ and the method attempted in the study referred to earlier was likewise a green-field site/new investment approach, similar to that used later by the Prices and Incomes Board to assess performance of British manufacturing firms.²²

In the circumstances it would appear that a mere statement of reserves in physical terms is an inadequate substitute for a full valuation of resources by management. If the insurance industry finds it possible to provide supplementary actuarial valuations for the benefit of both policy-holders and investors, it is difficult to see why companies operating in the extractive industries should not follow the same basic pattern.

At this juncture, it might be as well to recognise that other sectors besides the extractive and insurance industries face similar problems. Thus, for instance, firms in several manufacturing industries have long production cycles which render their conventional accounts of doubtful value for appraisal purposes. Obvious instances are the aerospace and pharmaceutical sectors, where companies have to commit relatively large proportions of their resources to R & D projects; not merely are eventual revenues uncertain, but so too are development costs. Yet a sudden breakthrough in a particular area – probably not specifically related to most of the R & D spending – can overnight add millions to the going concern value of the business.²³

The impact of diversification

Thus far the discussion has concentrated almost exclusively on the production side of an oil company's operations. However, outside North America (where there are some 10,000 independent wildcatters), small producers are virtually unknown. Instead – as in mining – it is large international concerns which dominate the industry.²⁴ This development has taken place primarily to enable companies to offset prospecting risks, but it also reflects the oligopolistic structure

²⁰See A. S. Manne, *Scheduling of Petroleum Refining Operations*, Harvard University Press, Cambridge, Mass., 1956; and R. J. Deam, J. W. Bennett and J. Leather, *FIRM: A Computer Model for Financial Planning*, Occasional Paper No. 5 of the Research Committee of the Institute of Chartered Accountants in England and Wales, London, 1975.

²¹See G. W. Gershefski, 'Building a corporate financial model', *Harvard Business Review*, Vol. 47, 1969, July/August, pp. 61–72, which describes that used by the Sun Oil Company.

²²A. Fels, *The British Prices and Incomes Board*, Cambridge University Press, Cambridge, 1972, ch. 12, especially pp. 215–217.

²³Examples also occur in marketing. For many products, sales tend to reach a peak following a build up of promotional effort, but after reaching this 'maturity stage' gradually tail off. However, firms usually hold a portfolio of products for sale at various stages of development, and this averages out the distorting effects in the accounts.

²⁴T. G. Moore, 'The Petroleum Industry', ch. 4 in W. Adams, *The Structure of American Industry*, 4th ed., Macmillan, New York, 1971.

of the industry. The early exploits of the Rockefeller, Getty and Gulbenkian families are well-known in this connection, and latterly the crude production side of the industry has been characterised by bilateral oligopoly conditions.²⁵ But quite apart from the competitive environment, the technological structure of the industry has also encouraged forward integration into tankers, refining, distribution and petrochemicals. At each stage the industry is highly capital intensive, and only large concerns have been able to raise the required funds to finance the necessary development expenditure.²⁶ At the refining stage in particular, scale economies are near infinite²⁷ – and, moreover, the picture is made more complicated by the fact that various joint products enjoying different demand elasticities are derived from cracking the oil. In the circumstances the tendency to pursue full integration policies right down to the marketing stage has been a natural one. Moreover, this has given the giant multinational corporations flexibility in manipulating transfer prices, enabling them to upstream or downstream profits and switch cash balances as required.²⁸

The net effect is that while segmental accounts for major oil companies – for instance, of ‘national’ subsidiaries – may be of extremely doubtful significance,

the very fact that overall the groups are both widely diversified geographically and highly integrated economically means that the general picture given in their consolidated accounts may after all be of some value to the analyst. Distortions arising from the use of artificial transfer prices are largely eliminated, except perhaps in the matter of stock valuation. Moreover, the published accounts and accompanying tables should enable the reader to get a general idea of the adequacy or otherwise of the spread of a company’s ‘portfolio’ of investments – for instance, it could be seen from Burmah’s accounts long before the débâcle of December 1974 that it was not merely heavily dependent on loan capital, but was also disproportionately reliant on the market value of its 21.5 per cent holding in BP and on the success of its tanker operations.²⁹

Over successive periods, too, even profit figures may give a reasonable indication of marketing performance. Changes in sales volume and price margins should be reflected in the figures, regardless of what particular consistently applied capitalisation/expense policy is used by a company³⁰ – and this appears to be the major point at issue between Most and Trueman. To test this proposition figures for the 12 companies examined by them were reviewed over a five year period to see whether trends in profits before depreciation, depletion, etc., were substantially different from those shown by profits net of such charges. The calculations are shown in the accompanying table, the ‘a’ rows showing annual percentage changes in the gross figures, the ‘b’ rows the variations in the net figures. It can be seen that in all cases the year-to-year movements are very similar, and it is suggested that the difference in the trends thus revealed would probably not be regarded as significant by most analysts.

Incidentally, it is interesting to note the underlying similarities of profit movements between the different companies year by year, which lends emphasis to the importance of industry-wide effects.³¹ On the other hand, this suggests analysts may have some difficulty in discriminating accurately between rival companies on the basis of published accounting figures alone.

²⁵The Rockefeller saga is briefly told in E. A. G. Robinson, *Monopoly*, Cambridge University Press, Cambridge, 1941, pp. 198–205. For more comprehensive descriptions of the industry and its development, see C. Tugendhat, *Oil: The Biggest Business*, Eyre and Spottiswoode, London, 1st ed. 1968, revised ed. 1975; and E. T. Penrose, *The Large International Firm in Developing Countries*, Geo. Allen and Unwin, London, 1968. Shorter descriptions can be found in Adams, op. cit., and (from the British viewpoint) D. Burn, ‘The Oil Industry’, ch. 5 in *The Structure of British Industry*, ed. D. Burn, Cambridge University Press, Cambridge, 1961, Vol. 1, pp. 156–217.

²⁶The importance of absolute-cost barriers in deterring new entrants is emphasised by R. Caves, *American Industry: Structure, Conduct, Performance*, Prentice-Hall, Englewood Cliffs, N.J., 1964, pp. 50–51.

²⁷C. Pratten and R. M. Dean, *The Economies of Large-Scale Production in British Industry: an Introductory Study*, Cambridge University Press, 1965, ch. 5. Scale economies are also an important feature in transport: OECD, *Oil: The Present Situation and Future Prospects*, OECD, Paris, 1973, ch. 6, esp. pp. 124–126; and E. Faridany, *LNG: 1974–1990*, Economist Intelligence Unit Ltd., London, 1974, pp. 47–54.

²⁸Apparently in the late ‘sixties the oil industry succeeded in three successive years in making a loss on its transactions in Europe: L. Turner, *Politics and the Multinational Company*, Fabian Research Series 279, Fabian Society, London, 1969, p. 14. For a general discussion of manipulation of transfer prices by multinational companies, see R. C. Morris, ‘The Financial Reporting Problems of Multinational Companies’, *Accountant’s Magazine*, Vol. 179, September 1975, pp. 317–320.

²⁹Annual Report of the Burmah Oil Company 1973; *Economist* 4/1/1975, p. 63.

³⁰The possibilities are reviewed in the texts referred to in note 5; Field, op. cit., covers the subject in ch. 4; and Most gives a good summary: *Accounting and Business Research*, No. 16, pp. 243–244.

³¹See P. Brown and R. Ball, ‘Some preliminary findings on the association between the earnings of a firm, its industry, and the economy’, *Journal of Accounting Research* 1967, Supplement on Empirical Research in Accounting: Selected Studies, pp. 55–77.

A further test was made to see if any light could be shed on the validity or otherwise of the depreciation and depletion charges made by the oil companies. If the matching principle is employed, one would reasonably expect the net profits to show less variability than the gross figures. The standard deviations from the five year averages for each company (given in the penultimate column in the table) show quite clearly that the net profit figures are indeed less variable in absolute terms. However, when measured in relative terms (using Pearson's coefficient of variation, shown in the last column of the table) it is the gross profits which are less variable, except for Getty and Burmah. Consequently, although one may conclude that the matching principle is not completely ignored by oil companies, there is little

evidence of profit smoothing,³² or even of a policy of increasing explorative effort (and thus usually the annual expense charge) as gross revenue rises.

The value of supplementary information to analysts

In the end, however, it must be admitted that the traditional accounts only paint a partial and incomplete picture of an oil company's financial affairs, and it is thus very difficult to see how many helpful ratio comparisons can be made between companies, as

³²For a brief discussion of the smoothing philosophy and further references, see R. C. Morris and G. H. Breakwell, 'Manipulation of Earnings Figures in the United Kingdom', *Accounting and Business Research*, No. 19, Summer 1975, pp. 177-178.

Annual variations in profit indicators for twelve major oil companies

Company	Row	Percentage changes over previous year				Standard deviation from mean	Coefficient of variation %
		1969-70	1970-71	1971-72	1972-73		
Exxon	a	8.41	18.80	30.66	47.56	1584.7	35.9
	b	7.25	20.87	44.05	58.65	1505.9	44.4
Texaco	a	8.10	6.97	2.64	38.72	281.3	18.6
	b	6.93	10.00	1.00	43.72	212.3	20.3
Gulf	a	5.39	17.64	3.53	44.65	452.1	23.7
	b	0.87	27.61	-0.08	61.43	406.6	29.5
Atlantic Richfield	a	2.09	11.66	0.92	29.95	85.0	15.3
	b	3.66	25.10	-3.45	49.35	76.7	24.2
Phillips	a	-1.28	3.63	10.00	23.18	58.3	13.5
	b	-4.08	5.85	9.05	39.63	42.3	19.2
Union (California)	a	3.92	1.89	7.72	16.33	39.3	11.5
	b	0	-2.89	15.48	31.44	32.5	16.9
Getty	a	10.75	22.36	-10.00	34.48	47.5	17.5
	b	6.17	29.07	-21.62	40.23	32.2	16.5
B.P.	a	22.17	53.61	4.70	45.39	280.0	36.4
	b	23.82	65.80	3.87	50.90	265.9	40.6
Burmah	a	7.55	8.77	9.68	38.24	14.5	21.7
	b	6.52	6.12	7.69	39.29	11.4	20.3
Mobil	a	9.21	13.25	9.57	24.27	1.8	18.7
	b	9.72	13.92	10.00	24.24	1.7	19.2
Shell T & T	a	4.05	31.81	2.08	58.33	183.7	31.1
	b	1.03	40.34	3.62	76.45	169.8	38.8
Tenneco	a	-4.76	1.79	-1.75	31.07	33.3	11.1
	b	-5.98	-0.58	-2.33	47.02	29.6	15.7

Row key: a Profits before depletion, depreciation, etc.

b Profits net of depletion, depreciation, etc.

Source of primary data: Moodiecards and Moody's Industrial Manual.

Most seems to suggest. Certainly, as Trueman points out, the return on net assets calculation is especially likely to be misleading. However, this is not a problem peculiar to the oil industry: rates of return are always subject to distortion, if only because of the use of invalid depreciation charges in their calculation.³³

One result of the inadequacy of oil and mining company accounts is that an analyst even more than usual must look elsewhere for information to help him assess performance and project future likely outcomes. Usually, in fact, a good deal of information is contained in the annual report, either in the chairman's review or in a statistical supplement, such as that published by Shell. However, it is no accident that there is unrivalled Press coverage of affairs in the extractive industries and, in particular, in the oil sector. There are, in fact, some twenty or so specialist publications which cover developments in the industry, ranging from the well-known *Oil and Gas Journal*, *Petroleum Times* and *Petroleum Economist* to rather more specialist publications, including those covering regional operations, such as the *Middle East Economic Survey*. In addition, a good deal of independent research is conducted from time to time on particular aspects, such as the feasibility of piping oil across Alaska, for instance.³⁴ On the marketing side, studies such as that prepared by the OECD provide a great deal of useful information for analysts trying to assess future likely outcomes.³⁵ Moreover, in the absence of a published valuation of reserves by management, such details can also help analysts assess overall performance in a more realistic manner.

An examination of 42 brokers' circulars containing profit forecasts for oil companies was undertaken to see whether or not the general impression could be confirmed that analysts rely particularly heavily on outside sources of information when studying the position of firms operating in this industry. It immediately became clear, in fact, that most research departments publish revised estimates each quarter when interim statements are issued. Moreover, the

analysis offered invariably compares an individual company to its major rivals. Forecasts, as usual, are built on to the framework presented by the latest reported figures, after making adjustments for a variety of factors. Usually the figures show R & D expense and depreciation/depletion charges separately, and it is evident that analysts specifically consider the likely effects of capitalisation/expense policies on reported earnings. The forecasts also generally reflect an allowance for an individual company's product mix, demand conditions in various geographical locations and different spheres of operations (e.g. petrochemicals), crude liftings and current supply prices both at the well-head and spot in the consumer markets, tanker commitments and charter rates, as well as the likely effect on reported income of such matters as stock profits, currency devaluations, taxes, and capacity utilisation. Interestingly, some effort was also made in the case of BP, with its as yet non-productive Alaskan and North Sea fields, to take out of the market price the capitalised value of these discoveries. The P/E ratios calculated on the resulting net figures could then be compared to the corresponding ratios of less fortunate majors.

Certainly the overall impression left by this examination is that brokers do indeed rely heavily on 'non-accounting' information of a technical nature which can only have been gained from a close scrutiny of the trade press. Moreover, it is quite clear that their forecasts are rather more accurate than can be achieved merely by extrapolating from past earnings trends.³⁶ In no fewer than 38 instances the analysts' annual profit forecasts performed better than any produced by three naïve models: (i) that annual profits would grow at the compound percentage rate of profit increase reported for the most recent year for which results had been published; (ii) that annual profits would grow by the absolute profit increase reported for the most recent year; and (iii) that future annual profits would be the same as those most recently reported.

Tax aspects

No discussion of oil company accounts would be complete without brief references to the tax implications and to dividend policy.

The structure of corporate income taxation is usually based on three criteria: objectivity (in the sense that there can be no argument over the determination of profits); an ability to pay; and equity. As regards the first two, neither a subjective value

³³The point has been made by several writers – e.g. G. C. Harcourt, 'The Accountant in a Golden Age', *Oxford Economic Papers*, Vol. 16, 1965, pp. 66–80; and E. Solomon, 'Return on Investment: The Relationship of Book-Yield to True-Yield' in 'Research in Accounting Measurement', American Accounting Association, Evanston, Ill., 1966. For a critical discussion of the use of the rate of return as a performance evaluator, see W. J. Vatter, 'Income Models, Book Yield, and Rate of Return', *Accounting Review*, Vol. 41, 1966, pp. 681–698; and, more generally, R. C. Morris, 'The book-yield as a performance evaluator', paper presented to the southern AUTA conference, Cardiff, 25th September 1971.

³⁴C. J. Cicchetti, *Alaskan Oil*, John Hopkins University Press, Baltimore, Md., 1972.

³⁵OECD, op. cit.

³⁶Cf. R. C. Morris and K. N. Bhaskar, 'The Accuracy of Broker Profit Forecasts' (forthcoming).

approach nor a current cost solution is likely to prove acceptable – as the *Holt* case showed, there is far too much room for argument even over market values³⁷; and if an asset is specific it may well be difficult to raise cash on its security value with which to discharge the tax liability. Such considerations are sufficient, it seems, to outweigh any concern for equity and ensure that an historic cost/point of sale system of income measurement is employed.

Nevertheless, as regards the oil industry, such a system provides loopholes, enabling companies to upstream or downstream profits by manipulating transfer prices.³⁸ Moreover, a blanket corporation tax of this type fails to tap fully the rent element of income earned by highly profitable wells, since usually the legislation has to be framed at the lowest common denominator so as not to discourage exploitation and – if desired – further exploration. As a result, producing countries usually try to supplement a basic profits levy with a secondary system of discriminatory royalty charges, based on posted or reference prices.³⁹ In addition, host countries are increasingly imposing fund repatriation and re-investment commitments, and, where they do not go as far as outright nationalisation, entering joint venture arrangements with operating companies.

It should thus be quite clear that the depletion and depreciation allowances permitted for fiscal purposes will usually not remotely reflect economic realities, but instead are designed to produce taxable profit figures in line with government policies. Such charges should obviously not be employed when striking a profit figure for financial purposes, but it might be noted that in many countries it is a requirement that they should in fact be booked.

Implications for dividend policy

Economically speaking a company should return to its shareholders all moneys it cannot invest as advantageously as they can, and where the dividend is greater than the firm's immediate cash resources it will be forced to liquidate some of its other assets. However, in practice it is usually agreed that a company's money capital should be maintained to protect unsecured creditors from the full effects of limited liability.

Although this appears to be the accepted wisdom throughout the world, in English law the position is not entirely clear-cut. In a number of cases around

the turn of the century it was argued that if the original money capital was lost in trading there could be no requirement that it should be made good – only that the circulating capital should be maintained.

How distributable profit should be calculated to ensure this minimum objective is met has never been strictly defined in the courts: to quote Lord Macnaghten in *Dovey v. Cory*, 'I do not think it desirable for any tribunal to do that which Parliament has abstained from doing – that is, to formulate precise rules for the guidance or embarrassment of business men in the conduct of business affairs'.⁴⁰ Instead, it has been left in the hands of directors acting honestly and competently to determine the fund out of which dividends may be paid.

In the circumstances the question might be asked whether it would be acceptable for directors to use a discovery value approach in determining the maximum amount of dividend they declare. Interestingly, several early dividend cases concerned firms operating in the extractive industries (e.g. *Lee v. Neuchatel Asphalte Company*, *Bond v. Barrow Haematite Steel Company*, and *Ammonia Soda Company Ltd. v. Chamberlain*).⁴¹ However, in none was the point specifically considered, though in the *Ammonia Soda Company* case an upward revaluation of a property on the basis of future expectations was regarded a perfectly valid procedure by Warrington, L. J. More recently, in the *Dimbula Valley* case, Buckley, J., has held that an unrealised capital gain can form the basis of a dividend distribution, so long as 'the valuation is not open to criticism'.⁴² In the meantime, life assurance companies have apparently declared dividends to shareholders unchallenged, despite the fact that their distributable surpluses have to be calculated using actuarial techniques.

Consequently, it seems quite possible that, so long as directors act honestly and without negligence, English courts would uphold decisions based on discovery values. However, it should be recognised that whatever criterion is used to determine the maximum fund out of which dividends may be distributed, it should not necessarily dictate the profit calculation shown in the published accounts.

Conclusions

John Trueman is right in arguing that it is 'exceptionally difficult' to interpret the accounts of oil

³⁷*Holt v. CIR* [1953] 2 All E.R. 1499. This was an estate duty case, of course, where market values were used to assess liability.

³⁸See note 28 above.

³⁹See Penrose, op. cit., ch. 7.

⁴⁰[1901] A.C. 477.

⁴¹(1889) 41 Ch. D. 1; [1902] 1 Ch. 353; and [1918] 1 Ch. 266 respectively.

⁴²*Dimbula Valley (Ceylon) Tea Co. Ltd. v. Laurie* [1961] All E.R. 769. Scottish courts seem to have taken a more restrictive view, however: *Westburn Sugar Refineries Ltd. v. CIR* [1960] T.R. 105.

companies – but the main reason for this is really that the financial statements present an incomplete picture, not that the capitalisation/expense policies of companies differ. The only satisfactory solution would seem to be for firms operating in the extractive industries to adopt a discovery value approach, with managements periodically giving details of their estimated values of the business or its reserves in supplementary statements, similar in nature to the actuarial reports already published by life assurance offices.

Nevertheless, despite their obvious shortcomings, oil company accounts can be of considerable assistance to outside analysts trying to assess performances, so long as the figures are treated with due care. An economically integrated group which is fully diversi-

fied geographically will have a widely spread portfolio of investments, and in these circumstances it should be possible to get some idea of relative operating performance from one year to another by studying trends in profits, be they gross or net of depletion charges. Moreover, a careful examination of the annual reports of individual companies and other published information should enable an analyst to pinpoint particular weaknesses and estimate future profits by aggregating sectoral forecasts. Afterwards he will be able to compare actual outcomes to budget targets, and in this way evaluate performance. Such an approach is likely to be far more useful than mere reliance on interfirm comparisons of conventional ratios, some of which (such as the rate of return) will be of very doubtful significance indeed.

Contributors to Accounting and Business Research

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Douglas H Briggs, BCom, BEC, AASA is a graduate of the University of Tasmania and an associate member of the Australian Society of Accountants. He is presently Senior Lecturer in Financial Management in the University of Glasgow having lectured previously in the University of Western Australia. Apart from his research interest in financial reporting, he has been involved in research into physical distribution both in the UK and in Australia. He is co-author of *Distribution of Groceries* (University of Western Australia Press, 1967).

David J Hatherly, BSc(ECON), ACA, is lecturer in Accountancy at the University of Glasgow. An economics graduate of University College, Cardiff, he was with Peat Marwick Mitchell's London office for five years before taking up his present appointment in 1973. He is currently engaged in research into audit theory.

G H Lawson is Professor of Business Finance at the Manchester Business School. He was a Visiting Professor at the University of Augsburg 1971-72 and has published many translations of German language papers. His other published work includes books, pamphlets and papers on finance, company law, cash-flow accounting etc. He has acted as a consultant to UK and overseas government departments and many industrial firms. Professor Lawson's current research interests include accounting methodology, valuation models, the financial crisis in British industry and working capital management. As one of three Europeans chosen on a competitive basis, he presented a paper on the cost of working capital to a conference at the University of Illinois in April 1975.

T A Lee is presently Professor of Accounting at the University of Liverpool. In 1976 he will take up appointment as Professor of Accountancy and Finance at the University of Edinburgh. His current research work is mainly in the area of corporate financial reporting and he is author of *Company Auditing: Concepts and Practices*, *The Funds Statement, Income and Value Measurement*, and *Company Financial Reporting: Problems and Analysis*.

R C Morris, BA, MSc, FCA, is a graduate of Bristol University and the London School of Economics, and is now Lecturer in Accounting at the former. After qualifying as a chartered accountant he worked as a consultant with the Economist Intelligence Unit. Amongst his publications on accounting topics are monographs on the relevance of the EEC's fourth directive, funds statement practices in the UK, and (as co-author) managerial experience in Brazil under inflationary conditions. He has also recently completed empirical studies on the impact of inflation accounting on share prices, the accuracy of brokers' profit forecasts, and the effect of diversification on company segmental earnings.

Wayne J Morse, PhD, CPA, is Associate Professor of Business Administration in the Graduate School of Business Administration at Duke University. He received his BBA from Siena College, his MBA from Cornell University and his PhD from Michigan State University. Dr Morse is a member of the American Accounting Association, the American Institute of Certified Public Accountants, and the American Institute for Decision Sciences. He is the author of recent articles in *The Accounting Review*, *Business Horizons*, *The CPA Journal*, and *Managerial Planning*. He was previously a member of the faculty of the College of Commerce at the University of Illinois.

Kenneth S Most is Professor, Finance and Accounting Division, School of Business and Organizational Sciences, Florida International University. He graduated in law from London University and holds the degrees of MA and PhD(Economics) from the University of Florida. He is a Chartered Accountant and a Certified Public Accountant (Texas). Author of books on Uniform Cost Accounting and personal investing, he has published about 100 articles; a recent article on 'The Cost Center Problem in the Oil Industry' was awarded a Certificate of Merit by the National Association of Accountants (USA). He is also the co-translator of Schmalenbach's *Dynamic Accounting*, and was a Simon Research Fellow at Manchester University 1958-9.

K V Peasnell, DipBusStudies, MSc, ACA, PhD. After qualifying as a chartered accountant in 1967, spent 1967-68 studying for the Diploma in Business Studies at Sheffield University; then worked in London during 1968-69 for IBM, and spent 1969-70 studying for the degree of MSc in Accounting and Finance at the London School of Economics. Awarded a P D Leake Research Fellowship for the period 1970-72. Since 1972 has been a Research Fellow at the International Centre for Research in Accounting. In 1975 he was awarded the degree of PhD for his thesis on the 'Usefulness of information to investors'. Publications include the ICRA Occasional Papers, *The Usefulness of Accounting Information to Investors*, and *Accounting Objectives: A Critique of the Trueblood Report*. He also worked for the Working Party on *The Corporate Report*.

L C L Skerratt, BSc(ECON), BA(Oxon), is a Lecturer in Accounting and Finance at the University of Lancaster. After studying economics and accounting at the London School of Economics and theology at Trinity College, Oxford, he held, until recently, a Lectureship in Economics at Lancaster. He has published several articles on the evaluation of convertible securities in the *Journal of Business Finance and Accounting* and in the *Investment Analyst*.

A W Stark, BA(Cantab), MBA, is a Research Associate at the Manchester Business School. He is currently working on the implications of accounting methodology, with special reference to the full specification of accounting arithmetic via a computer-based financial model. This research is supported by the Social Sciences Research Council and the Esmée Fairbairn Charitable Trust.

George J Staubus, CPA, PhD, is Professor of Business Administration and Faculty Director of the Executive Program at the University of California, Berkeley. He has also taught at four other American universities and the London Graduate School of Business Studies. His articles have appeared in a dozen periodicals in four countries and his books include one on financial accounting, *A Theory of Accounting to Investors* (University of California Press, 1961); a 1971 Richard D Irwin Inc book on cost accounting theory, *Activity Costing and Input-Output Accounting*; and *Objectives and Concepts of Financial Statements* (with W J Kenley,) published by the Accountancy Research Foundation, Melbourne.

D P Tweedie, BCom, PhD, CA, is a lecturer in Accounting at Edinburgh University. He qualified as a chartered accountant in 1972, having previously obtained a doctorate in industrial relations from Edinburgh University. His current research interests include communication difficulties in financial reporting and notions of fairness in wage determination.

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Editorial

Editors should no doubt be wary of stating too explicitly what they hope to achieve but a newcomer may perhaps be forgiven for trying to set down some (but not all) of his intentions.

First, a research quarterly in accounting should stand back from, but not be too far removed from, the pressures of everyday business life. One aim is to encourage discussion now of matters that are likely to be the practical problems of a few years hence. For example, 'value to the business', one of the key concepts in the Sandilands Report, was the subject of a number of articles in *Accounting and Business Research* in 1973-75.

A second aim is the continuing reassessment of problems to which 'solutions' have already been, or are in the process of being, promulgated. Skerratt and Peasnell's article on earnings per share in the Winter 1975 issue is a good example of this, as are also the articles in the current issue by Professor R. J. Chambers of the University of Sydney and Peter McMonnies of Thomson McLintock and Co.

It is a third aim to encourage not only discussion of international accounting problems as such but also to attract the best writers from all over the world. In the present issue five of the contributors are English (but two of them live in Scotland and one lives in Jamaica); the other three include a Scot, an Australian, and a Dutchman (living in Texas).

Quot homines tot sententiae – There are as many opinions as there are men. We hope to publish rather more book reviews than formerly and occasionally to have a book looked at by more than one reviewer. In this issue Samuels, Groves and Goddard's important and controversial *Company Finance in Europe* (a recent publication of the English Institute), is reviewed by both Professor R. J. Briston of the University of Strathclyde and Martin Gibbs of Phillips & Drew.

In short, it is hoped that *Accounting and Business Research* will continue to be relevant, controversial, international – and widely read!

Walter Taplin Prize

The Association of University Teachers of Accounting and the Council of Departments of Accounting Studies offer an annual prize of £10 for the best article published in *Accounting and Business Research*. The prize is to be awarded for the first time in respect of Vol. 6 (Nos. 21/24) 1975-76. The winning article will be chosen by the subscribers.

The prize is named in honour of the journal's founding editor, Walter Taplin.

The Functions of Published Financial Statements

R. J. Chambers

Objectives and functions

It has become fashionable to speak of the 'objectives' of accounting and of published financial statements.¹ An objective is an aim or a goal. It is commonly used of people or bodies of people. It can perhaps be used of things. But for the sake of clarity it seems preferable to speak of the 'functions' of things or instruments. One can speak of the function of a pen, a car, a house; to speak of the 'objectives' of these things would not ordinarily be considered apt. Ordinary usage would tolerate reference to the objectives of the user of a car, or the issuer of a financial statement, or the user of a financial statement. Now it has happened that many issuers of financial statements have had, as objectives, the concealment of information, the misrepresentation of results and the misdirection of users of the statements. If there is any danger that these objectives of some issuers of financial statements may come to be considered as possible and tolerable aims or ends of accounting, it is desirable at least to be able to distinguish these objectives from the serviceability of financial statements to users. There is no way of generalising about the objectives of issuers. But it is possible to generalise about the functions of accounts or financial statements with respect to users. We choose therefore to speak of the functions, rather than the objectives, of financial statements.

The recent surge of interest in the matter is curious. For decades there have been pronouncements,

recommendations and debates about particular elements of accounts. If the separate dicta on particular elements were to be a coherent body of doctrine, there should surely have been an explicit statement of the functions of the financial summaries in which these elements occur. This would have set the framework for the dicta on particulars; and it would perhaps have stifled the development of inconsistent or wayward rules for particulars. No such framework was stated. The consequence has been a series of *ad hoc* dicta which have claimed the allegiance of the profession. For the rate of progress of the art, this is unfortunate. Any more rigorously based rules will now be confronted with reluctance to reject the 'established rules', notwithstanding their contradictory and unsystematic character.

It is also curious that some have claimed to know so little about the functions or usage of financial statements. For at least a decade it has been said that little is known about the information needed by users of financial statements; or that no, or little, progress can be made towards improvement of the design of financial statements until more is known of the decision models and decision processes of their users.² A number of proposals for research in that direction have been made. So far none has yielded any result. However, long before 'objectives' seeped into the literature, at least some of the functions of published statements were known – or knowable, for a modest effort.

One known function

The financial publicity provisions of the early Companies Acts were intended to 'protect' creditors

¹e.g. *Report of the Study Group on the Objectives of Financial Statements*, AICPA, October 1973; Bryan Carsberg, Anthony Hope and R. W. Scapens, 'The Objectives of Published Accounting Reports', *Accounting and Business Research*, No. 15, Summer 1974, pp. 162–173; Peter Bird, 'Objectives and Methods of Financial Reporting: A Generalised Search Procedure', *Accounting and Business Research*, No. 19, Summer 1975, pp. 162–167; Accounting Standards Steering Committee, *The Corporate Report*, 1975, pp. 28–31.

²e.g. *A Statement of Basic Accounting Theory*, American Accounting Association, 1966, p. 31; *Report of the Study Group . . .*, p. 13; Lawrence Revsine, *Replacement Cost Accounting*, Prentice-Hall, Englewood Cliffs, 1973, p. 19.

of companies registered with limited liability. Protection was to take the form of advising them from time to time of the stock of assets which stood as security or backing for their claims.³ The implication of this should be obvious. Debts are commonly payable in money. To pay a debt in money requires money or other assets convertible into money. The extent of the security or backing is therefore given by the amount of money and the money's worth, or money equivalent, of other assets of a debtor at a given date.

No amount of argument can rebut this, though rebuttal has been tried. It has been argued, for example, that debts which are not due and payable at any date (at balance date, in particular) can be met and will be met out of moneys subsequently generated or borrowed, and that therefore the money equivalent of non-cash assets is irrelevant. But, in the first place, just as cash *may* be generated after balance date, so may additional debts be incurred. What may lie in the future has little to do with an assessment of debt cover at a given date. In the second place, debtors undoubtedly *hope* that they will be able to pay their debts when they fall due. But the hopes of a debtor are no assurance for a creditor. Every year thousands of debtors find themselves bankrupt contrary to their hopes. Default in only one respect, and action on the part of only one uneasy creditor, are sufficient to throw large corporations into liquidation or receivership long before the stipulated maturity date of a debt.⁴

Given the money equivalent of a debtor's assets at a stated date, creditors at least know their cover at that date. They may guess about their future prospects as they please. But given other figures which have nothing to do with the dated money equivalents of assets, they are ignorant then, and of course from time to time, of a debtor's solvency; their guesses about the future are based on shadows, not substance.

Comparison of the amounts of liabilities and assets cannot be said to be improper or questionable in

principle. It is a matter of commercial commonsense. Ratios of current assets to current liabilities, and total liabilities to total assets (or its variant, debt to equity) have long been calculated by the investment analysis services. The amount of liabilities cannot be challenged in principle, since they are contractual. And it cannot be said that long term liabilities need not be considered, since all liabilities may become due and payable in the event of default in respect of any single liability. The propriety of the comparisons or ratios thus turns on the propriety of the amounts representing assets; the comparisons or ratios are meaningless unless those amounts are dated money equivalents.

This single example indicates the kind of asset valuations which will serve *one* class of parties in *one* respect. But it can be shown that it also serves other parties in other respects. If shareholders do not know the extent to which a company's debts are covered by money and the money equivalents of other assets, they cannot judge the safety of their investments or their prospects of future income, both of which depend on present and continued solvency. If, in their own interests, employees take notice of financial statements, debt cover is indicative of their job security, in at least one respect. If managers do not know a company's debt cover in realistic terms, they do not know when to take remedial action to restore liquidity or to keep within the limits of loan contracts and debenture trust deeds. Indeed, they too are ignorant of their job security.⁵

Let it be noted that this analysis of the implications of one long-standing aspect of company law and commercial dealing has yielded one rule of accounting. It also entails another rule.

Creditors do not care from what particular source their claims are met, or by what particular assets their claims are covered, in the ordinary course of business. Debt cover ratios, whether they relate to total debt or to short-term debt, are ratios of aggregates. It follows that any such ratio is only a proper indicator if the elements of each aggregate are properly aggregable. Now the basic rule of addition is that like

³See, for example, B. C. Hunt, *The Development of the Business Corporation in England 1800-1867*, Harvard University Press, Cambridge, Mass., 1936, Ch. VI, esp. p. 129.

⁴The point is doubtless a matter of common experience. Two examples of very large corporations which were put into receivership or bankruptcy reorganisation, for default on modest proportions of their total debt, were Insull Utility Investments and Penn Central Transportation Co. See Aylmer Vallance, *Very Private Enterprise*, Thames and Hudson, London, 1955, p. 167; Joseph R. Daughen and Peter Binzen, *The Wreck of the Penn Central*, Little, Brown and Company, Boston, 1971, Ch. 10.

⁵Many have alleged that no single set of financial statements can serve their many potential users equally well; e.g. R. M. Skinner, *Accounting Principles*, Canadian Institute of Chartered Accountants, 1972, p. 33; *Report of the Inflation Accounting Committee* (Sandilands Report), H.M.S.O., London, 1975, para. 137. But no argument at any depth has been adduced; it has become a matter of dogma. A line of argument to the opposite effect was given in Chambers, 'Accounting and Business Finance', *Australian Accountant*, July 1952 (reproduced in Chambers, *Accounting Finance and Management*, 1969, pp. 39-69). The argument has not been rebutted.

may only be added to like.⁶ Since cash is one of the elements of any dated inventory of assets, and since cash is the form in which debts are liquidated, all amounts for non-cash assets must be 'cash-like'. Of course, this confirms the asset valuation rule stated above, since only the dated cash equivalents or money equivalents of non-cash assets are cash-like; only amounts for which they could be liquidated, if necessary, are cash-like. But the introduction of the basic rule for addition has more general application than in this case. Since all financial statements are aggregative, all must conform with the same rule.

Accounting functions and rules

The object of elucidating the functions of accounting cannot be anything else but the derivation of rules of accounting. It would be surprising if, in due course, the survey inquiries of Carsberg *et al* and the application of Bird's generalised search procedure (see footnote 1) were to yield a rule for asset valuation different from the one enunciated above. But it is a possibility.

The Carsberg survey sought answers to very general questions; it elicited very general answers. The answers summarised in Table 3 of the paper may be boiled down to one generalised form – 'to assist [different classes of people in different tasks]'. What form this assistance takes is not yet clear. It is conceivable that the assistance some have in mind includes forecasting or predicting specific future events or magnitudes; we say it is conceivable since others have made use of the so-called 'predictive ability' of accounting statements or figures.⁷ In any case, it is not to be expected that responses to very general questions will of themselves yield apt accounting rules. It is almost certain that some respondents will ask for what they would like, regardless of the possibility of getting it; and that some will have little idea of the logical or practical

difficulties of getting, through any modified form of financial statements, what they would like.

Bird's proposed procedure likewise is very general. In particular, it makes reference to 'decision rules'. Now, in respect of any particular type of decision, there are presumably as many decision rules as there are parameters. It is imaginable, for example, that a creditor of a company may take account of some financial characteristics of a debtor (at least, the debtor's current ratio, debt to equity ratio and achieved rate of return, where these are accessible); some non-financial characteristics of the debtor's operations and management (e.g., class of trade, trade reputation, business and social connections of the management); and some prospective features of the firm's operations. Bird's generalised search procedure certainly implies the last of these categories; step F is 'list the proxy or surrogate measures which evidence suggests will aid as the best predictors of the unobtainable data' (i.e., future data).

If from either of these two kinds of inquiry there emerges the conclusion that decision-makers need estimators or indicators of future financial prospects of a creditor's relations with a debtor, the question will arise: are these indicators to be found in the financial statements of debtors, or are they to be derived otherwise than from the accounts? There are certainly some (those who support replacement price accounting) who envisage that the normal (and only) financial statements published may be 'futurised' to provide, in some respects, the kinds of proxy or surrogate to which Bird refers. Any attempt to do this, however, can only yield statements which, in quality, are no better than their inputs. To calculate the consequences of actual past events is to obtain a factual statement. To calculate the expected consequences of future events is to obtain a hypothetical statement. The two forms of calculation are logically and technically different. To mix the two cannot yield a factual statement or a straight estimate of a future quantity. It can only yield a statement which is neither. Further, any attempt to devise such a mixed statement will inevitably lead to conflicting or contradictory rules. For example, to add the present money equivalents of cash and receivables to the 'depreciated' present replacement costs of non-monetary assets is to use two conflicting rules; and the sum violates the basic rule of addition.

If, on the other hand, the conclusion is reached that decisions turn on both factual and hypothetical statements, and it is proposed that quite separate rules be devised for each, then at least there must be a set of rules relating to the accounting for the factual past up to the date of the factual statements. To devise such a set of rules would be to solve one

⁶The consequences of violation, in accounting, of the rules for addition and relation were indicated first, to my knowledge, by John B. Canning, *The Economics of Accountancy*, Ronald Press Company, New York, 1929, pp. 199, 319. Those rules have been almost universally neglected in the literature. Their 'disciplining' implications were developed in Chambers, 'Measurement in Accounting', *Journal of Accounting Research*, Spring 1965; *Accounting, Evaluation and Economic Behavior*, 1966 (reprinted Scholar's Book Co., Houston, 1975); and in subsequent articles.

⁷e.g. E. O. Edwards and P. W. Bell, *The Theory and Measurement of Business Income*, University of California Press, 1961, p. 99; Revsine, *Replacement Cost Accounting*, Ch. 5. The Report of the Study Group... makes the predictive process 'central to many of the objectives set forth in this report' (p. 45). By contrast, and in my view wisely, the Sandilands Report avers: 'No accounting system can predict a company's future prospects' (para. 166).

of the problems of financial statement design. We shall have some observations to make later about the feasibility and utility of projected statements. An early sentence of this section can now be restated more specifically: it would be surprising if, in due course, other investigators should reach conclusions, in respect of the design of past-factual financial statements, which entail a rule for asset valuation different from the dated money equivalent rule.

The relevance of decision rules

We have indicated that a creditor (by way of example) may find at least three main classes of information pertinent to any particular decision. But if we are to concentrate on the financial aspects of decision or choice, it is unnecessary to know or to devise a full decision-model for any particular type of decision. It is necessary only to know in what respects *financial* information may influence decisions. This is clearly a more limited and more manageable task.

Further, the function of information in the process of choice may properly be regarded as negative rather than positive. We may follow a strategy suggested by Popper's conclusion that 'not the verifiability but the falsifiability of a system is to be taken as a criterion of demarcation' (between empirical and other systems).⁸ We may say that as between any two or more options, those which are not feasible will be ruled out; and as between those that are feasible, those with the least desirable expected consequences will be progressively ruled out. We may then formulate a few illustrative decision rules, keeping to the example of the creditor already used. We may say:

- (a) As between alternative debtors, give credit to the debtor whose current ratio (or liquidity) is the higher, other things being equal.
- (b) As between alternative debtors, give credit to the one whose debt to equity ratio is the lower, other things being equal.
- (c) As between alternative debtors give credit to the debtor whose rate of return is the higher, other things being equal.

The merit of these rules, taken singly, should be obvious. They are not the only rules, of course; but they are of more than trivial significance. They suggest that the financial state of the debtor at a given time is a desideratum of choice; or that several of the elements of financial state are significant desiderata of choice. Further if any dependent debtor knows that he will be 'screened' in accordance with those

desiderata, his decisions will be such that he maintains a 'profile' adequate to prevent him being screened out.

Now suppose the debtor to be the subject of a set of financial statements. The above rules and argument suggest that the dated financial state of a firm is relevant to the decisions or choices both of those who manage it and of those who are able to foster it or damage it. The relevance of a dated state to all decisions made at or about that date is widely recognised.⁹

States and changes in state¹⁰

The progress of any changing subject may be represented by a series of dated statements descriptive of its state. Progress may also be represented by a series of descriptions of events between any two or more dates. But if the state of the subject is changing, in part at least, at the informed discretion of some 'manager', the state from time to time must be discovered (a) as a consolidated and readily assimilable description of the aggregate consequence of past events, (b) as a check on the completeness of the description of events, and (c) as a foundation for making choices about the next ensuing interval. The connections between states and events through time may be set up as shown in Fig. 1.

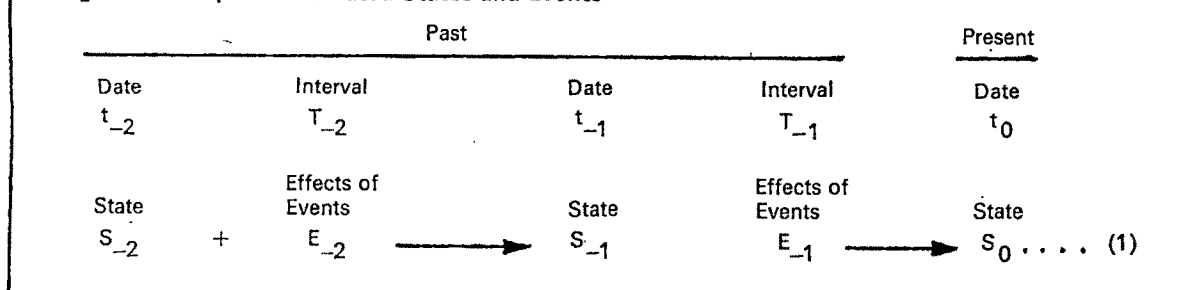
The 'state' referred to can be any defined state or sub-state; the events referred to are events of every kind which bear upon the state. State could refer, for example, to spatial position; progress would then mean change from one position or state to another. Suppose a person leaves London by car to drive to Glasgow in two days. Where he turns out to be (his state) at the end of the first day is a consequence of starting from London, of the stops he makes, of the route he takes and of his average speed over the hours of driving. If he expected to be in Preston at 6 p.m. on the first day, he does not drive till 6 p.m. and say to himself, 'Ha, this is Preston'. He finds his state independently of his expectations, by reference to road signs. If, on the first day he stopped short of Preston, he would have to modify his originally planned stops, route or speed to reach Glasgow by his originally planned time. The extent of those modifications would depend on just where he stopped at the end of the first day.

⁹e.g. G. L. S. Shackle, *Decision, Order and Time in Human Affairs*, C.U.P., Cambridge, 1969, p. 5; Geoffrey Vickers, *The Art of Judgment*, Methuen, London, 1969, p. 15; Talcott Parsons and Edward A. Shils (eds.), *Toward a General Theory of Action*, Harper Torchbooks, New York 1962, Ch. 1.

¹⁰The demonstration which follows is a restatement and extension of Chambers, 'The "Objectives" of Accounting', *Singapore Accountant*, 1974, pp. 39-45.

⁸Karl R. Popper, *The Logic of Scientific Discovery*, Science Editions, New York, 1961, p. 40.

Fig 1 The Sequence of Dated States and Events



Now consider expression (1) as a representation of some sub-state of the financial affairs of a firm – say, its cash account. There will be a dated opening balance or ‘state’ of cash holdings. There will be receipts and payments (events) having a net effect. There will be a closing balance. If the closing balance does not correspond with the actual balance on hand, there will have been some event the effect of which is not accounted for. Whether it is discovered or not, the effect of some additional event must be entered on the record to make the record correspond with the ascertained amount of cash on hand. This kind of adjustment, of the ‘expected’ or calculated to the actual, is commonplace in accounting.

Next consider expression (1) as a representation of the financial history of a firm. S will represent the assets and equities of the firm at the subscript date. E will represent the income of its related interval T , and any other changes in S in the same interval. S and E will be quantified in terms of the money unit (which we suppose, in the first instance, to have a constant general purchasing power). Its state at any date is the complex of its financial relationships with others. Legal possession of its assets means that it has rights of use and disposal as against all others; in financial terms it has the capacity to buy goods or pay debts up to the sum of the money equivalents of all assets. Its liabilities and owners’ equity represent claims to payment out of the assets and the residual money interest in the assets respectively. Its financial position or state at any date can be determined by taking an inventory of its assets and equities. Like the state of the London-Glasgow driver, financial state is discovered independently of the expectations and the prior state or states of the firm, or of its managers or its shareholders. It is discovered in the only place where the money equivalents of assets are discoverable, the market place.

Given only the financial states S_{-1} and S_0 , the manager of the firm might wish, or be required by others, to explain the change in state. He might try to recall the events which occurred during the interval.

But as there are many components of a dated state and many intervening events, and as memory is hazardous, he would not be likely to provide much by way of explanation. That is why accounts are kept. We suppose now that the firm keeps accounts.

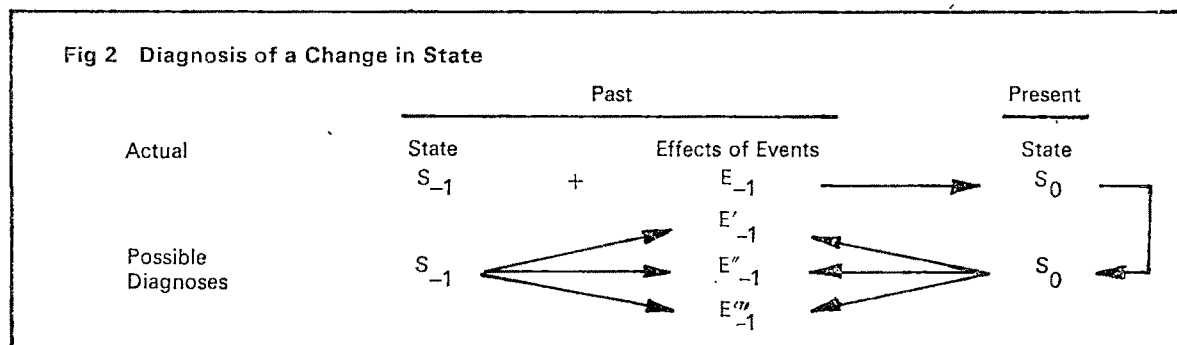
The states S_{-1} and S_0 are in no way altered by the keeping of accounts. They are discoverable as before, by taking inventories. As in the case of the cash account mentioned above, the taking of an inventory is the occasion for changing the book values of assets (where necessary) to make them correspond with their independently discovered money equivalents; and the amounts of the adjustments become part of the aggregate effects E_{-1} of the events of the interval T_{-1} . The adjustments may relate to book-keeping errors, to losses of physical goods or money, to depreciation and other rises or falls in the money equivalents of assets.

Diagnosis

Managers do not want to know, as a matter of idle curiosity, the events whose effects, quantified in money, explain the shift from S_{-1} to S_0 . They want to know the magnitudes of the elements of E_{-1} so that any decision taken at t_0 may be the better; so that they may take advantage of favourable elements, and avoid unfavourable elements, of E_{-1} if those elements persist in T_{+1} . They will want to know whether the change in the amount of receivables during T_{-1} is due to a change in sales volume or to a change in collections, and if the latter, whether the change was intended or involuntary; whether changes in inventory holdings are consistent with turnover; for what reason and by what process (external or internal) has the firm’s liquidity improved (or deteriorated); whether any element of S_0 is materially better or worse than was expected at t_{-1} or at any date in T_{-1} . The reader can imagine an extended series of such questions.

The process of diagnosis which yields the answers to these questions starts from a known present

Fig 2 Diagnosis of a Change in State



state, S_0 , and a known past state, S_{-1} . The events which connect the two and the effects of each such event are not known with any exactitude at the outset. As in all exploratory work, the analyst will set up a series of possible explanations of the change in state, and test each for its adequacy. These possible explanations are possible sets of elements of E_{-1} . But being hypothetical we may denote them by using primes, as in Fig. 2. We may use the same general symbol E both for the description of the actual changes in state and for the identification of the classes of events or policies (illustrated in the previous paragraph) which can be associated with those changes; what is to be explained must be equal in total to the explanation.

The analysis will be directed to finding that set of policies, internal operations and external events which is the most likely explanation of the greater part of the change, or the greater part of the unexpected 'causes' of the change. Analysis may extend backwards, to T_{-2} , T_{-3} and so on. It will be assisted by the calculation of rates, ratios and trends. As its object is to associate the changes in absolute or proportionate magnitudes with dated external and internal events, the elements of S_{-1} , E_{-1} and S_0 must relate specifically to t_{-1} , T_{-1} and t_0 respectively. For, if they do not, no trend in the figures will correspond with the real trend in events and states; and no association of dated external events and influences with the dated quantifications of E and S will be valid or instructive. It follows that any form of accounting which, in representing states from time to time, mixes past magnitudes, present magnitudes and magnitudes based on then future expectations, cannot yield instructive diagnoses.

As S_0 is the common basis for each of the exploratory exercises, it follows that, if S_0 is incorrectly stated, diagnosis will be mistaken, since an explanation will be sought of a change in state which is greater or less than, or qualitatively different from, the change that actually occurred.

We have dealt with analysis and diagnosis as a

managerial exercise. Others also make similar uses of reports of financial states and changes in the financial states of firms. External analysts, the information services of the securities market, and individual shareholders and creditors have far less detailed information than internal officers. They must rely more heavily on the observable shifts in external conditions and on inferences (which they cannot corroborate) from the firm's own statements. For even greater reasons than those given for internal analysis, instructive diagnosis depends on the closest possible correspondence of the actual states and events with the dates and periods with which a firm's published report identifies them. It is not proper to embody the effects of anticipated or intended events in reports of dated states, even on the ground that users would like to know the 'shape' of a firm's future; for this would rob users of any chance of basing their judgments of the future on diagnosis of the actual present state and its causes.

Prognosis

'The future is not there to be discovered, but must be created'.¹¹ All the consequences of decisions yet to be made at any date lie in the future. But they all stem from the present state. It may not be obvious that the present state limits the decisions which it is possible to make, since most people do not consciously reconsider their financial states, on the whole, when making a choice. However, if they leave out of consideration some parts of their wealth, they do so because they do not wish, at the time, to change the form in which those parts are held. This is, in fact, part of their choice.

The situation of managers is substantially the same. They do not reconsider the whole of the composition of the wealth of a firm when they are contemplating some change in its composition. In other words, they do not want to know what it would cost to replace the

¹¹Shackle, *Decision, Order and Time*, p. 16.

Fig 3 Exploration of Possible Futures at t_0

Present			Future		
Date	Interval		Date	Interval	Date
t_0	T_{+1}		t_{+1}	T_{+2}	$t_{+2} \dots$
State	Effects of Events		State	Effects of Events	State
S_0	$+ E'_{+1}$	$\longrightarrow$	S'_{+1}	$+ E'_{+2}$	$S'_{+2} \dots (1)$
S_0	$+ E''_{+1}$	$\longrightarrow$	S''_{+1}	$+ E''_{+2}$	$S''_{+2} \dots (2)$
S_0	$+ E'''_{+1}$	$\longrightarrow$	S'''_{+1}	$+ E'''_{+2}$	$S'''_{+2} \dots (3)$
$\dots$	$\dots$				

whole of the firm's assets. The typical variation in the investment in assets is modest in size; it is a marginal change. Nevertheless, managers are free to conceive alternative uses of the funds employed in any set or combination of assets. The amount of the funds employed at any date and free to be employed in any other way is given by the sum of the money equivalents of assets. Managers are also able to vary the amounts and kinds of liabilities and issued shares, subject to existing contractual limits. The financial state of a firm at any given time therefore limits the decisions it is possible to make and the alternative possibilities it is reasonable to consider; but in no way does it limit the number and variety of new events, pressures and opportunities which may influence the firm for good or ill.

Using the same style of notation as before, we may set up the possibilities which lie before the firm at any present time as in Fig. 3.

The sequences (1), (2) and (3) represent three possible courses of action available at t_0 , given the state S_0 . The state S_0 is factual; but the values of E and S thereafter are all possibilities only, and carry primes to signify this. The events to which E'_{+1} , etc. refer are, as in the earlier discussion, both transactions and external influences. To be more precise, they are *expected* transactions and *expected* influences of *expected* trade and economic events, particular and general. At any time t_0 , given the state S_0 and the general state of the environment of the firm, these expectations are crystallised, quantified. They are expectations of what Shackle has called 'the solitary moment'. They are unique and will not recur at any subsequent t . If, for example, course (1) of Fig. 3 were taken at t_0 , the actual state at t_{+1} will not necessarily be (and is in general unlikely to be) equal to S'_{+1} , and the values of E' and S' as they are expected at t_{+1} will not be equal to the values as they were expected at t_0 . But as all expectations proceed

from a known S_0 , *inter alia*, the importance of knowing S_0 as it is in reality, and the importance of correspondence between S_0 and any statement representing S_0 , should be apparent.¹²

The manager of the firm will choose that course of action which is expected to yield the best outcome for the firm, *all things considered*. Many have described this objective as maximising the gain to the shareholder – in terms of the sum of dividends and share price movements. But this is an invalid presumption since no manager can know the preferences of different shareholders for different combinations of dividends and price appreciation and for different timings of either. Many have interpreted the objective as maximising the profits of the firm; hence the emphasis on net present (discounted) value and discounted cash flow calculations. But this overlooks, or may cause others to overlook, the possibility that the firm may never achieve the expected profit or cash flow if liquidity or other strains intervene between the date and the time horizon of the decision. Yet others have interpreted the objective as maximising the wealth of the firm. But this is subject to the limitation just previously mentioned.

There are, as it seems, two interdependent and equally significant conditions which any decision must satisfy – a profit condition and a solvency or liquidity condition. These are interdependent in the sense that the greater the deployment of funds in non-cash assets, the greater the potential profit, but the greater also is the risk. If external conditions

¹²The importance of the balance sheet has long been subordinated, among accountants, to that of the income account. That this view is mistaken was argued in 'The Function of the Balance Sheet', *Chartered Accountant in Australia*, April 1957, pp. 565–70 (reproduced in *Accounting, Finance and Management*). The whole of the argument of the present paper affirms the significance of the balance sheet.

subsequently shift adversely to the firm's then present asset holdings and the expectations they entail, there is the risk of loss on redeployment of the firm's investment. And if the firm's liquidity is strained, there is the risk of lost opportunity for redeployment in more promising investments. Two quite different and complementary forms of calculation are necessary: present value or D.C.F. calculations, and projected quantifications of the expected values of E and S .

Therefore at t_0 it is necessary to screen out, of all conceivable courses of future action, those that are not feasible, given the state S_0 (i.e. the amounts and compositions of assets and equities, expressed in dated money equivalents). Of those that remain, the present values of each will be computed. Any course of future action will usually entail proceeding as before in respect of many components of total operations, but varying some, or adding some or abandoning some. It is sufficient, in appraising the proposed 'marginal' changes, to calculate only the net present values of the alternatives at the margin (including of course the 'status quo' alternative). The feasible courses of action would then be ranked in order of net present value. For those ranked most highly, there would be computed projected values of E and S for at least one future period, and for as many future periods as may be necessary. The object of this is to screen out any course which will place the firm under liquidity strains or will lock it into undesirably inflexible positions (e.g. through investments in assets not directly convertible to cash or through onerous long term debt).

These three sequential tests may be described as the financial feasibility test, the net present value test and the financial viability test. The first relates to the actual state S_0 of the firm as a whole at t_0 . The third relates to the prospective state or states, S'_{+1} , $S''_{+1} \dots$, S'_{+2} , $S''_{+2} \dots$, etc., of the firm as a whole. The aspects of these states which are of consequence are the short-run liquidity or solvency of the firm (as indicated, say, by the current ratio) and the gearing of the firm (as indicated, say, by the debt to equity ratio). Clearly these ratios must be based on the same kinds of data as the ratios at t_0 and earlier dates, if in choosing any course of action the dated value or the temporal shift in any ratio is to be taken into account. These prospective ratios must thus satisfy the same conditions, as to proper aggregation of the elements of their numerators and denominators, as were stipulated in the previous section on diagnosis. That is to say, the whole of the elements of any projected financial statement representing any S'_{+n} shall be expressed in dated money equivalents as at t_{+n} . It should also be clear that the effects of

events E'_{+n} must correspond with the interval T_{+n} in which they are expected to occur, if the state S'_{+n} is to be a basis of a proper judgment about any prospective course of action.

Further, the net present value calculations relating to any prospective project require (a) knowledge of the money equivalents at t_0 of any assets to be disposed of for the purpose of engaging in that project (without this the prospective interest costs or other sacrifices entailed by the project cannot be computed); (b) estimation of the prospective outlays and receipts of money or money equivalents to the time horizons of the project and its alternatives; and (c) selection of a discount rate. The raw data of (a) and (b) will of course enter into the projected income statements and balance sheets representing expected future quantifications of E and S . Thus, although present value calculations may seem to be specific to the projects they represent, under the three-test form of exploration here suggested each is tied in with the present and prospective positions of the firm as a whole, and judged on that basis. This is the only way in which due weight may be given to the prospective yields and the prospective effects on financial positions of projects under consideration; the only way in which a manager may choose the best course of action, *all things considered*.

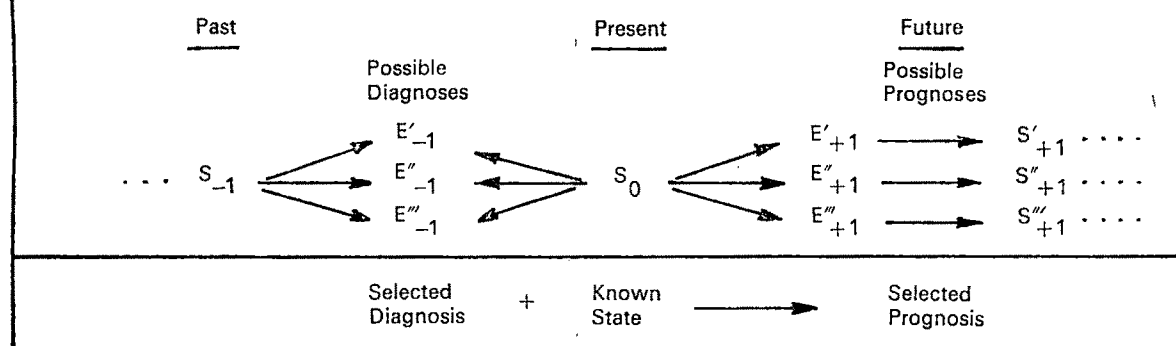
Summary – so far

The total usage of knowledge of a present financial state may be indicated by combining Figs. 2 and 3, as in Fig. 4. The importance of the best possible indication of S_0 should be apparent. It is the one class of information that is used (a) as a check on records of the effects of past events, (b) in diagnosis and (c) in each of the three tests – financial feasibility, net present value and financial viability – of alternative future courses of action.¹³ Its uses in all of these settings dictate that the relevant asset values shall be the money amounts or money equivalents of assets at any t_0 .

Inflation (or deflation)

Earlier in this paper we set aside the possibility of variations in the general level of prices – the problem of inflation. It can now be taken up. Let U represent one money unit, and U_0 represent one money unit having the general purchasing power of one money unit at t_0 . U_0 may then be described as a dated money

¹³In 1952, long before developing the theory of continuously contemporary accounting, I envisaged a system yielding statements which 'like Janus, would look both ways, backwards and forwards', 'Accounting and Business Finance', see footnote 5.

Fig 4 Diagnosis and Prognosis at t_0


unit. The financial progress of a firm through successive states may then be summarily represented thus:

Date t_{-2} t_{-1} t_0
 Financial state $U_{-2}S_{-2} \rightarrow U_{-1}S_{-1} \rightarrow U_0S_0$
 Every component element of, say, S_0 will be represented in money units U_0 ; there are no other money units, with different general purchasing powers, available at t_0 .

In particular, the current ratio at t_0 is the ratio of current assets expressed in U_0 to current liabilities expressed in U_0 . The ratio is mathematically legitimate. Since the money units are of the same significance, the ratio reduces to a pure number. The ratios at t_{-1} and t_{-2} are likewise mathematically legitimate and reduce to pure numbers. It is therefore legitimate to compare the ratios of successive periods, or to map the trend in the ratio. The same line of argument applies to the gearing or debt to equity ratio, and to any ratios indicative of the composition of assets. The legitimacy or validity of all such ratios and comparisons turns on the identity of the money units in which their numerators and denominators are expressed.

But if we are to interpolate between each state an expression of the effects of intervening events, so that the operations of addition implied in Figs. 1 and 2 may be valid, a way must be devised of linking states expressed in U_{-1} to states expressed in U_0 . In the earlier stages of the argument, S and E had reference to all aspects of a dated state – the amounts and composition of assets and liabilities and owners' equities – and changes in any or all of those aspects. For present purposes we concentrate on class aggregates, and suppose that no new contributions were made by owners and no dividends were paid. We suppose also that changes in liabilities give rise to equal changes in assets. (These suppositions are in the interest of simplicity of exposition only; minor

adjustments only are necessary to accommodate variants of them.)

In an inflationary period, liabilities constitute a hedge against losses in general purchasing power in respect of the investment in assets. The effect of a shift in the general purchasing power of the money unit thus falls on a firm to the extent of its net assets; in other words, the amount of the net assets at any date is the amount at risk of changes in the general purchasing power of the money unit. As was pointed out at the beginning, the method of representation used may be applied to any part or subset of a whole state. Let N be the amount of net assets and Y the amount of income in any period. Then the relevant subset of the sequence represented in Fig. 1 is:

$$U_{-2}N_{-2} + UY_{-2} \rightarrow U_{-1}N_{-1} + UY_{-1} \rightarrow U_0N_0 \dots (1)$$

Note that the units in which the Y s are expressed are not yet dated; the operation of addition is not yet validated. Like the E s in the earlier demonstration, the Y s may be broken down into parts. There are three such parts.

If any asset held at t_{-1} or bought during T_{-1} is sold at a price different from its book value at the date of sale, the difference is a *realised surplus* (or deficit). Call the sum of these surpluses ER (realised effects of events). If any asset is revalued during T_{-1} or at t_0 , in the light of changes in its purchase price or its money equivalent, the amount of the revaluation will be charged or credited to a *price variation adjustment* account. Call the sum of these adjustments EA (accrued effects of events). Then $(ER + EA)$ is numerically equal to the difference between N_0 and N_{-1} . It includes the effects on the firm of all changes, in the period, in the structure of prices. But this sum, in money units, cannot be dated since the differences of which it is composed arose at different dates through T_{-1} . And if the general level of prices has been rising, the sum will overstate the amount of the change in the general purchasing

power of the net assets in the period.

Let P_{-1} and P_0 be the values of an index of changes in the general level of prices at t_{-1} and t_0 respectively. Let the proportionate change in the index,

$$(P_0 - P_{-1})/P_{-1}$$

be p_{-1} . Then in terms of general purchasing power,

$$U_{-1} = U_0 (1 + p_{-1})$$

From (1)

$$U_{-1}N_{-1} + UY_{-1} = U_0N_0$$

By substitution

$$U_0 (1 + p_{-1}) N_{-1} + UY_{-1} = U_0N_0$$

By transposition

$$UY_{-1} = U_0N_0 - U_0N_{-1} (1 + p_{-1}) \dots \quad (2)$$

Since both the U values on the right hand side are U_0 , we may rewrite the left-hand side as U_0Y_{-1} . And since numerically $(N_0 - N_{-1}) = ER + EA$, we may write (2) as follows

$$U_0Y_{-1} = U_0(ER + EA - p_{-1}N_{-1}) \dots \quad (3)$$

The last term on the right hand side may be described as EM . It is the aggregate effect of changes in the general purchasing power of money on the opening amount of the net assets in any period. It is the amount necessary to be charged against the aggregate increment $(ER + EA)$ to maintain the general purchasing power of the opening net assets. And, as the amount of net assets is commonly described as the capital employed, EM may be described as a *capital maintenance adjustment*. Of course if the gross increment $(ER + EA)$ is reduced by EM to obtain net income, the amount of EM must be credited to some other ownership account, such as a capital maintenance reserve.

The result deserves several comments.

First, since N embraces assets and liabilities, Y includes the effect during inflation of the hedge provided by liabilities. Second, although the components of ER and EA are not assigned dated U values, the full effect of ER , EA and EM can be assigned a dated U value. Third, the income Y could,

by a reverse substitution, have been calculated in terms of U_{-1} ; but as it is represented in the balance sheet at t_0 by assets denominated in U_0 , it must be represented in terms of U_0 . Fourth, all of the arithmetical operations are valid, and all the elements represented are systematically interlocked. Fifth, all the data required are available as a matter of record (given the discovery of the money equivalents of assets at balancing dates); there is no guesswork and there are no gaps. The adjustment necessary in passing from a report in U_{-1} to a report in U_0 is explicit; no restatement of past representations of assets or equities is necessary.

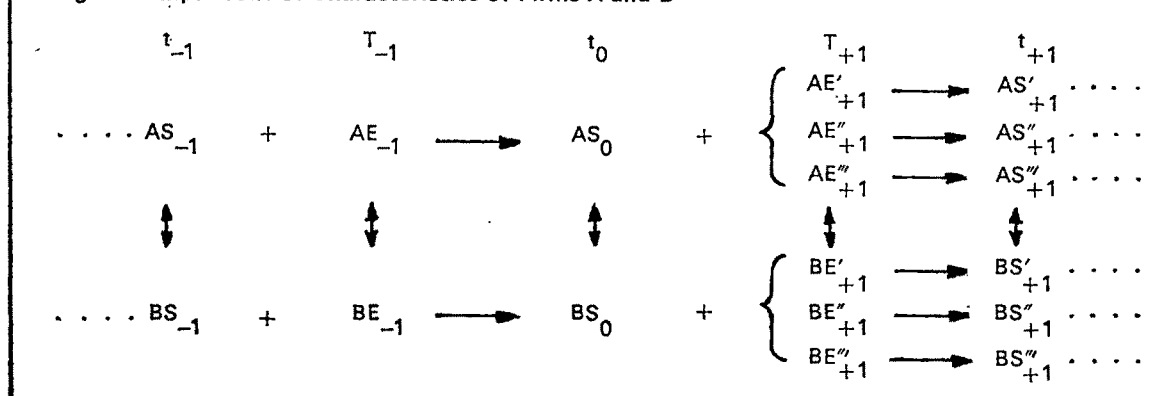
As for the use of the figures in analysis and diagnosis, the propriety of using current ratios and debt to equity ratios has been established. The rate of return yielded by the above process is, for the period ended t_0 , $U_0Y_{-1}/U_0N_{-1} (1 + p_{-1})$. Being inclusive of the effects of borrowing and of the three parts ER , EA and EM , it is a full and complete indication of the consequence of the efforts of any firm to contend with all the financial variables of trade and finance. It may fairly be compared with rates of return (calculated in the same way) of previous periods for a given firm and of other firms.

Interfirm comparisons

Both managers and investors (and perhaps others) are the better informed when choosing investments or making appraisals by comparisons of the financial features of two or more firms. There are no absolutes by reference to which one may judge a firm singly. And in any case choice entails relative judgments about alternatives. The scheme presented earlier may be extended as in Fig. 5.

This represents that, at any time t_0 , managers and others will compare past states, effects of past events, present states, prospective effects of events and

Fig 5 Comparisons of Characteristics of Firms A and B



prospective states of two or more firms, A, B, etc. Investors will necessarily have less information about future prospects than managers. Nevertheless, a deliberate investor will attempt to formulate some idea of the prospects of the firms he compares. But without dependable information on the states of those firms at or about the time of comparison, he will have no reliable grounds for his prognoses. In general, no comparison of the financial characteristics of firms is valid or instructive unless the principles of independent discovery of states from time to time, temporal correspondence of reports of effects and the occurrence of effects, and completeness of representation, are followed uniformly by all firms.

Forecasts

If there were a future 'state of nature' which was reasonably predictable *and* in which any firm and its present operations had an assured place, there might be some point in publishing forecasts of financial results and positions. But, as we have noted, the future is yet to be made, by the present decisions of those managing firms and by the present decisions of others competing with them for survival and growth. 'Any statement about the future is uttered in the sense of a wager. We wager on the sun's rising tomorrow, on there being food to nourish us tomorrow, on the validity of physical laws tomorrow; we are all of us gamblers – the man of science, and the business man and the man who throws dice . . . we cannot avoid laying wagers because this is the only way to take future events into account'.¹⁴

At any time a firm may well intend to continue exactly as before, or to replace this or that plant, or to engage in this or that new venture. But it cannot make those things happen if drifts in its financial position preclude them, or if the world in which it works is against them. Every firm is but one against the rest; it must take its chance. 'Taking future events into account' is materially different from predicting. I am tolerably certain that no manager thinks, for one minute, that a set of accounts or even a set of budgets predicts what will happen. And, as it seems to me, any practice (such as the publication of forecast financial positions and results) which may induce outsiders to believe that the future of any single firm in the volatile world of commerce is predictable flies in the face of experience; it should not be condoned. There is, in fact, no way in which the contents of any statement of the expectations of the managers of firms can be validated at the time

it is made. And it has happened frequently enough that announcements of promising prospects have shortly been followed by retractions or reversals.

The functions of published financial statements

We have refrained from argument which depends on interpretations of the many 'terms of art' with which the literature abounds. These have led too often to global justifications of one kind of accounting or another, without analysis of the particular uses made of the aggregates and sub-aggregates found in financial statements. We have chosen rather to start from particular uses, and to deduce from these the kind of information which is serviceable in known settings. This is a quite unusual procedure to judge by the literature; yet it is the way in which all deliberately designed artifacts are created.¹⁵

We have not found it necessary to know the decision models of any class of person. It has been sufficient to know some of the elements of choice, those elements which may be used to screen out some of the possible courses of action which lie before any decision-maker. The situations of managers, investors and creditors have been referred to in sufficient variety to indicate that the functions of financial statements may be stated quite generally in respect of both.

Other parties who may make use of the financial statements of firms include monopoly or trade practices tribunals, price regulation authorities, industrial tribunals, fiscal authorities and foreign trade and tariff authorities. Business firms cannot know when they may wish to take advantage of the benefits or to contest the impact of the constraints of such bodies. The safest course is to be prepared for either, by knowing and reporting financial states and results as exactly as is possible.

The functions which emerge are as follows:

- (i) *To inform on financial characteristics of firms.* Financial statements relate to financial positions and results. They do not relate to economic, technical, mercantile or other features of business. They are used for diagnosis and prognosis of financial states and results, and must therefore be equally serviceable for both.
- (ii) *To inform currently from time to time.* As diagnosis depends on the correspondence between (a) reported states and results and (b) actual states and results and observable events, dated information should be expressed in money units and

¹⁴Hans Reichenbach, *Experience and Prediction*, University of Chicago Press, Phoenix ed., 1961, p. 315. See also Shackle, *Decision, Order and Time*, Ch. II.

¹⁵See Chambers, 'A Critical Examination of Australian Accounting Standards', *Abacus*, December 1975, introductory section.

money quantities specific to the stated dates or intervals. As choices turn, *inter alia*, on present positions and recently past results, the latest information should be as up-to-date in all respects as is reasonably possible.

(iii) *To inform on the aggregative financial features of firms.* Financial states and results are aggregative in nature. They are the backdrop or context of every decision of financial significance, by insiders and outsiders. Every singular amount which is a component of an aggregate must therefore be of the same kind as all other such components. Aggregates of different kinds of amounts are neither logically meaningful nor fairly indicative of what they purport to represent.

(iv) *To inform completely* on the financial consequences of all events and transactions period by period. If any of the realised or accrued effects of events are not reported in its appropriate period, diagnosis will be inapt and judgment, appraisal and prognosis will be inadequately founded. If all realised and accrued effects of events are reported, the periodical reports in series will constitute a full and connected financial history of the firm.

(v) *To inform in a uniform manner* for all firms. No legitimate comparison can be made of the positions and results of different firms, at a given date or at successive dates, unless like transactions and like events are treated alike, both as to timing and quantification.

Finally –

In the course of this paper there is more than a hint of the style of accounting – continuously contemporary accounting¹⁶ – which will serve the functions

indicated. This is not incidental. It has been necessary in order to illustrate the uses of particular kinds of information, and to indicate that what have been here proposed as functions are neither unreasonable nor unattainable.

However, the analysis has proceeded by reference to the circumstantial settings of judgments, appraisals and choices, and within the necessary constraints of the rules of aggregation and relation. It should therefore be possible to consider the stated functions, individually and as a set, on their merits. If they stand up, they entail that there can strictly be no such thing as ‘accounting policies’ of particular firms.¹⁷ It follows also that any system which defers recognition of experienced effects or anticipates unexperienced effects is deficient; and that any system which entails the addition of unlike magnitudes in statements of position and results also is deficient. On these two tests, so-called CPP accounting and ‘current value’ or ‘current cost’ varieties of replacement price accounting cannot be judged to be serviceable. There may be partial justifications for these and other forms of accounting; but no systematic analysis of the full setting in which financial statements are used can fail to yield the conclusion that these two tests must be satisfied by any generally serviceable form of accounting.

¹⁶First developed in *Accounting, Evaluation and Economic Behavior*. A condensed statement of the argument and method is given in *Accounting for Inflation*, 36 pp., 1975, available from the author.

¹⁷See also Chambers ‘Accounting Principles or Accounting Policies?’, *Journal of Accountancy*, May 1973, pp. 48–53. This conclusion is in marked contrast to the tenor of recent national and international ‘standards’ on disclosure of accounting policies.

Corporate Reporting in the Future

P. N. McMonnies

Introduction

What are accountants trying to achieve when they prepare annual accounts? This is a question which has exercised the profession throughout the world for a long time, but never more so than in recent years. Various answers have been given, but for some reason none of them appears to have had very much effect on the nature or shape of financial reporting. (An exception to this general statement is the work of the Dutch economist-accountants.)

The most recent attempts in the UK to answer the opening question are the discussion paper published for comment by the Accounting Standards Steering Committee of The Institute of Chartered Accountants in England and Wales, in association with the other recognised British accountancy bodies, entitled 'The Corporate Report' and the University of Kent's 'Statements of Objectives and Standard Practice in Financial Reporting'. The purpose of my paper is to use those documents, particularly the former, as hooks upon which to hang some thoughts about developments in financial reporting from the viewpoint of accountants in public practice.

I do not intend to quote from either of the two documents more than absolutely necessary because I assume that anyone who is sufficiently interested to read this article will have studied them. Neither do I intend to litter my text with footnotes. For this I apologise to my academic readers, who, I know, like to be signposted to additional reading. For their benefit I shall include a select bibliography at the end. However, I hope that the readership of the paper will not be confined to those who teach or study at universities and colleges, and I know from experience that accountants outside academe tend to be irritated rather than helped by having their reading constantly interrupted by little figures scattered all over the page.

The approach to the subject will be as follows. First, I shall define some of the terms I use (it is

always helpful to know what a writer thinks he means); then I shall try to gauge whether the objectives of the two groups are the right ones, bearing in mind that anything decided as a result of their suggestions has to have practical application. The next step will be to consider the ASSC working party's proposals for a 'corporate report' – particularly in relation to commercial types of organisation – and at the same time the university group's proposals, which are confined to limited companies, will be dealt with. The possible effects of both sets of suggestions on the work of the practising accountant will be the principal consideration in this section of the paper. In that connection it will be necessary to spare a few thoughts to the (unfortunately highly-charged) issue of accounting for changes in the value of money. After that, I shall try to judge what potential report users, as identified by the working party, really want, and finally I shall endeavour to draw some conclusions.

May I make it clear at this early stage in the paper that any opinions expressed are my own: if they are shared by anyone else, this is purely coincidental. On the other hand, 'there is no new thing under the sun', and I lay no claim to originality. I am sure that the same or similar thoughts have been written or spoken many times before – although the writers or speakers may well not have agreed with them.

Definitions

Both the ASSC's working party and Messrs. Macdonald, Bird and Climo of the University of Kent are to be commended on the precision with which they use the English language. I only hope that I can make myself as clear, and I, therefore, offer no apology for 'lifting' some of their terminology.

The expressions needing explanation which readers will find in this paper are as follows:

The working party: The working party, set up by the Accounting Standards Steering Committee, which produced 'The Corporate Report'.

The University group: The preparers of 'Statements of Objectives and Standard Practice in Financial Reporting'.

An organisation: Any economic entity within society.

Financial statements: Statements which deal principally with financial transactions and positions of organisations and which the law or some other authority requires to be made public.

A corporate report: A report for publication, including, but more comprehensive than, financial statements, which provides all the information of whatever nature necessary to provide a complete description of an organisation's economic activity over a period of time.

The Corporate Report: The ASSC working party's discussion paper.

Practising accountant: Any accountant who offers his services to the public at large, whether as auditor or in any other professional capacity.

Objectives

The working party's objective, as laid down in the terms of reference, was 'to re-examine the scope and aims of published financial reports in the light of modern needs and conditions'. The working party was asked to identify, in the course of its examination, those in whose interests financial reports should be prepared, what information would be appropriate to them and the most suitable means of presenting that information. Also considered was who should be required to report, taking into consideration the importance of 'public accountability'. The working party reached the conclusion that there is implicit responsibility on every organisation to present publicly a corporate report provided that its size or format makes this desirable. On the purpose of such a report the working party stated: 'The fundamental objective of corporate reports is to communicate economic measurements of and information about the resources and performance of the reporting entity useful to those having reasonable rights to such information'.

The university group's principal objective was a contribution to the debate on the fundamental objectives of accounting statements. To accomplish this they have used an exposure draft format, similar to the one adopted by the ASSC. As indicated above, the discussion is confined to the needs of investors in companies. The documents with which the group deals are a cash flow statement, an income statement and a financial position statement, and the fundamental objective of such statements is identified as communicating 'data selected for its relevance to the defined needs of a defined person'.

It will be noted that the conclusions reached by both groups about the objectives of financial statements, while they are not exactly similar, encompass the point that the information provided must be *useful*.

This conclusion is not very different from that reached by various other individuals or groups who have considered the matter. Howard Ross put the objective more simply as follows: 'To tell someone as clearly as possible something he ought to know in order to help him do something he ought to do'. I have not so far met anybody who dissents from this, but not too much has so far happened to bring about its fulfilment.

If we can agree upon the need for financial statements to be useful, we can perhaps also agree that they should be *used*. It has often been said – and some researchers have been endeavouring to prove it – that the majority of non-accountants do not understand reports which accountants prepare and accordingly tend not to take very much notice of them. If this is so, there is something very far wrong. Various excuses have been made for such a state of affairs, in particular that the economic activities of even a small business are so complicated that their purport can be conveyed only by a set of financial statements that are themselves complicated. Another excuse has been that, because accounting is a technical subject, 'lay' people should not be expected to understand what accountants are saying; they should have it interpreted for them in the same way that people tend to get legal documents explained. Both these arguments seem to me to be defeatist. Certainly the activities of business are complicated, just as life itself is complicated. But biographers are able to communicate the salient points of their subjects' lives: are accountants incapable of communicating the salient points of an organisation's? The object of a legal document is not basically to communicate: it is to fix a legal position. So we should not compare legal and accounting documents. And are accountants oracles or interpreters? I suggest that they ought to be the latter, and accordingly they should not 'speak in tongues' but in good, plain, understandable language, albeit that language is heavily dependent upon figures.

Admittedly, as I said in an earlier paper (see the select bibliography), the accountancy profession has still a lot of educating to do, both of those who use financial information and of those who provide it, but this does not – at any rate in my view – excuse the profession as a whole from giving the most intensive study to the problem of making financial reports more and more comprehensible. Accounting, as we have seen, is only a medium of communication. Its

purpose is not to provide stimulating intellectual exercise for those who do it, nor to give them a pleasant means of passing the time. If it does not meet the test of *telling* the reader something which will help him, it fails in its prime purpose.

Who is reporting?

The working party concluded that provided that organisations have

1. more than 500 employees on average during a reporting period; or
2. capital employed of £200m on average during a reporting period; or
3. annual gross turnover of more than £5m

they are significant and should have a responsibility to report publicly. In addition, there are certain organisations whose very nature makes it desirable for them to report, e.g. local authorities and bodies in which public moneys are invested.

The types of entity which the working party had in mind include all kinds of limited companies, partnerships, nationalised industries, public bodies, trade unions, trade and professional associations, charities, trusts, pension schemes and other non-profit-seeking organisations. The university group restricted its consideration to companies.

If the working party's view is accepted, the number of organisations which are going to have to make their accounts available to public scrutiny will increase significantly. So more financial statements will have to be the subject of reports by independent accountants. This means more audit work and more headaches for the practising accountant, because, almost certainly, a smaller proportion of organisations will have good internal control and will provide good audit evidence. There will also be brought into the net organisations of a type which have not been subject to compulsory audit before. The accountant is clearly going to have to extend his range of audit techniques. He is also presumably going to have to extend his professional liability insurance cover (we shall think more about this at a later stage of the paper).

Who is to use the report?

The university group confined its considerations to investors, but the working party identified seven categories of people who can have reasonable rights to information about organisations. These groups are:

- (a) equity investors,
- (b) loan creditors,
- (c) employees,
- (d) analyst-advisers (financial analysts and journalists, economists, statisticians, etc.),

- (e) business contacts,
- (f) the Government, and
- (g) the general public.

We shall consider them individually at a later stage in the paper to see whether we agree with the working party's conclusions.

The Corporate Report

In the previous section I have tried to indicate what the two studies are trying to achieve and what conclusions the working party reached about who should report and who should be reported to. There is a lot of work still to be done in the research field to find out what information ought to be communicated to what users by corporate reports, and we shall return to this facet later. Present indications are that detailed financial statements are neither understood by, nor helpful to, the bulk of those whom the working party has identified as potential users. However, this assumption could be wrong, so I propose now to consider what the working party thinks should be added to the present package of statements and to see what effect their adoption would have on the practising accountant. At the same time I shall comment on the proposed changes of the university group.

(a) The balance sheet and the profit and loss account

There can be little or no argument that accounts prepared on an historical cost basis are not helpful to users when the value of money is fluctuating, even to a fairly small extent. The accountancy profession has been giving thought to the next step forward arising out of the publication of the Sandilands Report and no doubt we can expect an exposure draft, followed by a Statement of Standard Accounting Practice, within the next year or two. It is, therefore, valueless to speculate on what is likely to be required of the practising accountant in this respect except to note that as auditor he will undoubtedly be called upon to make some sort of report on whatever inflation-adjusted figures are finally decided upon.

In relation to CPP accounts, the professional bodies recommended that the auditor's report contain an opinion (if such be the case) 'that [a CPP Statement together with notes] fairly restate in summarised form the results for the period and financial position of the company expressed in terms of the general purchasing power of money'. This was appropriate in relation to a supplementary statement but will not apply if the inflation-adjusted figures form the basic financial statements. In such case, the 'true and fair view' - if

this concept is retained – will have to apply to the revised method of reporting. As the working party believes that accounts will have to be kept for the foreseeable future on the historic cost basis, this will mean that auditors will have to satisfy themselves about the translation of the historic figures into whatever 'current' figures may be decided upon. It may well be that they will also have to inform themselves to a greater extent than at present about revenue-earning capacity equivalents of the fixed assets belonging to the clients on whose accounts they are working. At the very least they will have to know the appropriate indices to apply to assets used in various industries.

Depending upon what the eventual standard says, the whole concept of earnings, profit and distributable profit may have to be reconsidered, and calculations of such ratios as earnings per share may have to be re-thought. In other words, it may become critically important for auditors to ensure that appropriate parts of the final earnings figure per annum are correctly allocated.

The university group has taken a rather more revolutionary stand on the equivalents of the balance sheet and the profit and loss account and has specified future-orientated information for the next three periods in addition to past and current information. The proposed statement of financial position would show the assets of a company at their cash equivalents, which are defined as 'the highest proceeds, less realisation expenses, realisable by ordinary sale on the assumption of cessation of present activities', i.e. break-up values (but not on a forced sale). The future values would be similarly estimated. The income statement would show actual and forecast 'operating income', i.e. the income distributable on the basis that the revenue-earning capacity of the company is maintained. The university group has gone into some detail as to how forecasts of such income should be arrived at.

If the group's proposals ever come to be accepted, the practising accountant will be involved with considerably more subjective information than he is at the moment. His audit techniques in relation to the existing position of the company will not vary but his approach to valuations most certainly will. In addition, he is bound to have to satisfy himself about the reasonableness of the projected results and position.

However, I cannot see the university's group ideas being adopted for a considerable time. While I believe that what they suggest would be more helpful to users of financial statements than the present data, there are two obvious objections. The

first is that, unless it was made compulsory for all organisations to produce this type of report, those who did would almost certainly suffer in comparison with those who did not because they would be disclosing information which would be just as valuable to their competitors as to those with more legitimate rights to it. The second is that disclosure of asset break-up values would almost certainly indicate a worse financial position than even historical figures, and this could give users entirely the wrong impression. One of the major difficulties about most future-orientated information, particularly in times of economic difficulty, is that it may become what is referred to as 'a self-fulfilling prophecy'. An honest projection may show that a business has little chance of survival in the medium term whereas circumstances and the right action by management may prove the case to be quite otherwise. Such a state of affairs is dangerous, and could be disastrous. It seems to me, therefore, that this is an area where more deliberation is needed. In addition, a very considerable educational drive would be necessary before the university group's suggestions could be implemented in practice.

(b) Funds Statement

A definite requirement for the publication of funds statements has only recently been introduced by SSAP 10. Accordingly, we have not had too much experience of these statements in the UK until now. Basically, as the working party points out, they are a rearrangement of the information available from the profit and loss account and balance sheet, so that, having verified the figures in the two latter statements, the auditor has only to see that the rearrangement is of such a nature as fairly to disclose the movements in the organisation's resources. This sounds simple enough in theory but it is possible to imagine balance sheets prepared on some valuation bases giving rise to difficulties of presentation when it comes to the funds statement. For example, enhancement of asset values on which no funds have been expended could mislead the uninitiated and the unwary. In such cases it will not be the underlying figures that cause the auditor trouble but rather the wording of the funds statement and the way in which the information is presented: he will have to satisfy himself that they do not mislead.

The university group's proposed cash flow statement is much more than just a rearrangement of the figures in the other statements. It would provide a very valuable description of the way in which cash has flowed through the business in the

past three periods and a forecast of what is likely to happen in the next three. The verification of past flows is not likely to present any problems to an auditor but, as with all future-orientated information, his involvement with the forecast flows would cause some concern. The whole presentation of this statement would require his serious consideration as it is one which could easily mislead the layman if its message was not unambiguous and the distinction between actual and forecast data not clearly drawn.

(c) Statement of Value Added

This statement again is basically a rearrangement of information readily available from a business's records. The working party admits that its suggestions in this respect are no more than illustrative, and the following are some additions which suggest themselves as being helpful to a user: the various dispositions of the value added as a percentage of the total figure; the average per employee of the amount paid to employees; and the average per amount invested of the amount paid to providers of capital. As the working party also points out, there are problems in relation to this statement with such items as extraordinary expenditure. It is not easy to foresee all such areas of difficulty without knowing what conclusions will be reached in relation to inflation accounting, but obviously the statement will have to take cognisance of these matters. Whatever the outcome, the auditor will be responsible for seeing that the way in which the material is presented is both comprehensible and not liable to mislead.

(d) Employment Report

While there may be some justification for wondering whether the suggested information to be given by this statement will really be of great general value, the question which I should like to consider at the present time is whether or not the employment report should fall within the group of statements to be covered by the audit report. In view of the fact that much of the information given is of a quantifiable nature, I believe that a demand for it to be verified by an independent person will arise. If that be true, then the practising accountant is going to have to extend his interest in the data relating to personnel and to satisfy himself on a number of matters which are at present either not within his purview at all or only so to a limited extent. One wonders, however, whether some of the information suggested is verifiable or whether it would be just too easy for the company to suppress evidence so that no outside observer

would be able to pick it up. For example, how would an auditor satisfy himself about a complaint to the Race Relations Board and its outcome if all the documentation was removed from the company's files? It seems unlikely that the Board would welcome the auditors of all the companies in the UK asking them to confirm the number of formal complaints lodged with them and their outcome.

My own view is that this particular statement, like some of the others suggested by the working party, should not be one upon which the auditor is required to express an opinion. If he is, he will have to give considerable thought to the techniques necessary to enable him to be reasonably satisfied about the accuracy of all the information in the statement relating to personnel.

(e) Statement of Money Exchanges with Government

This statement is certainly one which should fall within the sphere of the audit. As it is a rearrangement of information which the practising accountant will have verified in the course of his normal audit work, it should present no particular problems. Indeed it might well be treated as a sub-statement of the funds statement and be dealt with along with that document.

(f) Statement of Foreign Currency Transactions

The working party rightly recognises that the direct contribution of each organisation to foreign currency transactions is the maximum that should be required to be disclosed although they would apparently not be averse to seeing indirect transactions included if this were possible. An auditor will be able to satisfy himself about direct receipts of overseas currency to the UK and direct export of UK currency overseas. It will, however, be almost impossible for him to satisfy himself about indirect currency earnings or payments. So, while it should be possible for the audit report to cover the direct transactions, if the business decides to estimate what else in the way of foreign currency it has earned or spent, I believe that the additional information should be given in a separate statement not subject to audit.

(g) Statement of Future Prospects

The working party's proposal that businesses should publish statements of future prospects is a very important one. Understandably, all the enquiries which have been made about the information needs of those interested in the financial affairs of businesses have pointed to a concern with the future. For the majority of

statement users the past has been valuable only to the extent that it provided a guide towards what might happen in time to come. Stewardship has not been a major consideration – 'let the dead past bury its dead'.

The working party has therefore called for a statement providing, for the year following the balance sheet date, information on expected

- (a) profit levels;
- (b) employment levels and prospects; and
- (c) investment levels.

The statement would include a note of the major assumptions underlying the projections.

At the present time practising accountants are concerned with projections mainly in the context of takeovers. The City Panel on Takeovers and Mergers has laid down in the City Code what it believes the accountancy profession should do where profit forecasts are made public and the accountancy profession itself has provided certain guidance to its members in this area. The practising accountant also has certain responsibilities (though of a less direct nature) in relation to prospectuses. Whichever aspect of the matter he is considering, however, he has to make it very clear to users of his report that he is not in any way guaranteeing the outcome of the projection but only confirming the accuracy and consistency of the mathematics and the accounting policies used.

If a statement of future prospects such as the working party envisages becomes a part of the corporate report, it seems logical that the auditor should provide the same sort of 'comfort' to readers about future profit levels as he does in takeover situations. The information provided by the business about its likely future employment levels and investment levels is not, however, likely to be so clear-cut. The auditor, if he were to become involved, would have to be prepared to satisfy himself that on the basis of past experience the number of employees required and the sums to be invested by the business were reasonable in the light of the assumptions made. This is rather more than an application of mathematics and consistency, so, if he undertook it in relation to these aspects of a business's future, there would presumably be a demand for him to act similarly in relation to profits.

I believe that none of the projections present insuperable problems for practising accountants but I am concerned that they immediately open up a much wider area of professional liability. In particular, the future prospects statement is going to be studied – and possibly trigger off action against auditors at some time in the future if the

forecasts prove to be wrong – by almost every user or potential user of a corporate report. One can envisage underwriters restricting their professional negligence cover – or, at the very least, demanding considerably increased premia. If this suggestion of the working party is adopted and if practising accountants are to be required to report, it seems to me that the statutory restriction of accountant's liability which the professional bodies have been seeking will become essential. Even with such restriction in liability, one can foresee actions against practising accountants on a scale much greater than anything that has so far happened in the UK.

Accordingly, while the working party's proposals are probably along the right lines from the point of view of corporate report users, the position of the accountancy profession in relation thereto requires serious consideration. I am not against accountants assuming additional responsibility if that is in the public interest but I should nevertheless be strongly opposed to anything that might place the future of the profession in jeopardy. The ramifications may be wider than appear at first sight: the whole problem calls for concentrated study.

The working party also say that, if there are projections, they should be compared with results and any differences explained. This is a role which the practising accountant can easily undertake and which does not give rise to the difficulties mentioned above.

(h) Statement of Corporate Objectives

This proposed statement has the purpose of telling readers about management's general philosophy or policy on the one hand and about the 'medium term strategic targets set as steps towards implementing' them on the other. The working party would like managements to quantify their targets as far as possible, but it seems unlikely that this is an area in which the practising accountant could become involved as he could with future prospects. Here we are dealing with management and its objectives, and the means of attaining those objectives may be different in the long run from the happenings of the immediate future dealt with in the previous statement. In any case, to express an opinion on a target is so subjective as to fall right outside the accountant's normal competence.

(i) Directors' Reports

The working party does not have any major suggestions to make in respect of the directors' reports required under the Companies Acts 1948 and 1967. It is, however, perhaps appropriate at

this stage to consider whether, if the suggestions which we have already discussed are implemented and the practising accountant has to become increasingly involved with quantifiable data, he should not also be required to concern himself with such data in the directors' report. Practically, of course, every auditor considers the directors' report in relation to the audited accounts and ensures that there is no discrepancy between the two. He is also concerned that the directors' report is not likely to mislead users when read in conjunction with the audited statements. Accordingly, it does not seem a very large step to bring directors' reports within the compass of the statements upon which the auditors are required to express an opinion. Inevitably this would open up a wider field of liability for the practising accountant, but it would also provide additional assurance for users of the corporate report.

(j) Chairmen's Reports

The Corporate Report commends the publication of chairmen's statements, and such little evidence as is currently available suggests that these are the documents most likely to interest those who receive financial statements. Because of their nature, it would seem undesirable that chairmen's statements should fall within the scope of the audit report: if they were subject to audit, this might have an inhibiting effect on chairmen and diminish the usefulness of their statements. As with directors' reports, auditors normally review any financial information which chairmen intend giving and satisfy themselves that what he is going to say is in no way inconsistent with the data in the financial statements. This position seems unlikely to change as a result of the working party's suggestions, and there does not seem to be any compelling reason why it should. It will have to be borne in mind, however, that there will be additional statements (such as future prospects) with which consistency must be achieved.

(k) Summaries of Results for Previous Years

The Corporate Report also commends the practice of publishing summaries of previous years' results. It suggests that summarised profit and loss accounts, balance sheets and funds statements should be published for at least five years previous to the current one. This information would obviously be helpful to those users who were trying to establish a trend but would almost certainly require to be supplemented by information about the changing values of money during the period concerned. There would appear to be

no difficulty in having this particular statement reported upon by practising accountants.

(l) Other Matters

Three other matters which the working party considered and recommended for further study are 'disaggregation', 'social accounting' and 'multi-column reporting'. By the first term, the working party means that the business of an organisation concerned should be analysed among sectors appropriate to it (operating divisions, geographical divisions, group companies, product groups, markets, etc.). The working party would like to see turnover, value added, results before tax, capital employed and employment information given for each sector. However, since the working party recognises the practical difficulties of this type of exercise and proposes further research, I do not propose to pursue it any further at this stage.

As regards social accounting, this is a matter about which much has been said and written during the past few years, but the accountancy profession has not so far reached any conclusion as to how it might be done practically. The working party recognises the need for further study in this area also.

Multi-column reporting in basic financial statements is a matter which the working party seriously considered. The purpose of this would be to allow one basic set of reports to provide information to meet the needs of the various classes of user. The working party recognised that it would be helpful only if it met the needs of users and was understandable by them. Accordingly, further research in this area is also recommended. In parenthesis, one might anticipate the result of such studies: if present financial statements are incomprehensible to the majority of people, multi-column statements will be even more so.

Changes in the Value of Money

The problem of how to report meaningfully in an inflationary environment has been considered on and off for at least fifty years. Various suggestions have been made, argued about and rejected or ignored. Only in the Netherlands has there been any widespread practical attempt to depart from the historical cost concept, and even this has not concerned itself primarily with inflationary conditions but rather with more meaningful reporting of the extent to which a business's substance is being maintained.

If reports are to be helpful at all, the obvious shortcomings of historical cost accounting have to be

overcome. The Corporate Report discusses the problem and under existing conditions tends to favour the CPP approach recommended by British accountancy bodies in their provisional SSAP 7. The working party believes, however, that the whole area requires further research.

Since the Corporate Report was published, the Sandilands Report has also come out in the UK and has been accepted in principle by the Government. Sandilands has opted for a CCA approach (i.e. it has tended towards the Dutch view rather than the British). The Consultative Committee of Accountancy Bodies in the UK has indicated that it is prepared to accept the Sandilands proposals in principle but still believes that something has to be done to show the effects of the diminishing value of the pound in general.

In considering the whole problem one has to bear in mind that the PSSAP 7 approach and the Sandilands approach are looking at different things. The underlying concern of the former is the worth of the proprietors' capital in terms of the current pound; the concern of the latter is to show what the business's assets are worth currently.

This paper is not the place to enter into a lengthy argument of the merits or demerits of CPP or CCA or to deal with other possible (or impossible) solutions to the problem of inflation accounting. The purpose of this section is merely to draw to the reader's attention the fact that everything that has been said previously has to be considered in the light of the problem. It is no use giving users information which, because of changes in the value of money or in the value of specific property, does not mean what it appears to mean. This is a problem which has to be overcome; my own view is that neither the British accountancy bodies nor the Sandilands Committee have fully answered yet all the questions and that neither could they unless they had undertaken very much more thorough research into the basic purposes of financial reporting than they have so far achieved. The working party is right, there is a lot that needs doing in this area.

The Needs of Report Users

Thus far in the paper we have accepted in principle the proposals of the working party and to a more limited extent of the university group. On that basis we have thought about the consequences for the practising members of the accountancy profession; but corporate reports are not prepared for the benefit of practising accountants. This section of the paper will, therefore, endeavour to pinpoint the needs of the various users of corporate reports. As I have already

mentioned, the suggestions of the working party are not backed up by practical research in this area and neither, I should imagine, are those of the university group. I do not criticise either of them for that: this is the sort of exercise which cannot be undertaken lightly or hurriedly. (It is, however, comforting to know that a number of researchers are working in this field at present and, even if their results do no more than bear out what most of us intuitively believe, they will make a valuable contribution to a decision about the right type of corporate report.) I have to confess that I have not carried out any research in this area either, so my own opinions are just as suspect as those of either of the two groups.

Report users

This part of the paper reminds readers of the user groups identified by the working party and discusses briefly my own reactions to its findings.

(a) *The equity investor group* – This group can be sub-divided (though the working party did not do so) into:

- (i) individual existing shareholders;
- (ii) individual potential shareholders;
- (iii) institutional shareholders; and
- (iv) governmental or other official participation.

The first two groups again can be divided into those who are using investment as a means of saving and those who are endeavouring to make gains by playing the market. The informational needs of these parties differ among themselves and one has to pose the question whether the most helpful communication from the organisation to the various members of each sub-group is necessarily by means of a published corporate report. We shall look at this later when we consider what users want to know.

(b) *The loan creditor group* – The working party seems fairly to have identified why, on the face of it, members of this group need information about an organisation. We should remember, however, that some members of this group are so placed as to be able to obtain special purpose reports from management; so again there is a question mark against the extent to which corporate reports are really valuable to the whole group.

(c) *The employee group* – Ever since the ill-fated Industrial Relations Act 1971 governments have been showing an increasing interest in the informational needs of employees. That this group has needs is not in dispute; what is questionable is whether corporate reports are the right media for meeting these needs.

(d) *Analyst-adviser group* – Clearly, the require-

ments of this group must be based on the requirements of those for whom they are carrying out the analysis or whom they are proposing to advise. These 'principals' may be any of the other groups identified by the working party. The relevance of a corporate report to the members of this group is, therefore, dependent upon the needs of the other groups. In addition it has to be remembered that members of this group may be able to obtain information which does not normally form part of a corporate report.

(e) *The business contacts group* – It is possible to accept the working party's findings on the informational needs of suppliers (who also have needs in their capacity of trade creditors) and customers. It is more difficult to accept that competitors and business rivals have any *rights* to information, though they obviously have desires. The needs of the first two business contacts deserve to be met but is a corporate report the right means of meeting them? Do the other two contacts really deserve any consideration at all?

(f) *The Government* – It seems almost superfluous to worry about the needs of central and local government in the context of The Corporate Report. These bodies have – or can take – legal powers to obtain whatever information they require – and they frequently do so. Admittedly, if organisations have to supply periodical information, it may be helpful to consider where the needs of governmental bodies overlap those of other users. However, governmental needs should not be a factor in considering the purpose or nature of the corporate report for general publication.

(g) *The public* – Very similar considerations apply to the public's need for information. Those members of the public who fall into one of the other groups have the needs of those groups. The needs of the remaining members of the public are more tenuous and they cannot expect to be provided individually with information. The government, local authorities and other bodies of a supervisory nature are there to look after the interests of the public and it seems fair to require that organisations should provide them with whatever information they need on behalf of the general public. (These supervisory bodies have a duty, on behalf of the public, to see that the laws passed for the benefit of the public are being obeyed, whether they deal with payment of dues into the public coffers, the proper use of community-owned assets, the proper protection of the environment, or whatever.) Indeed, it is difficult to envisage individual members of the public

being users of corporate reports at all unless they are members of one of the other groups identified: accordingly it seems somewhat pointless to consider the purpose of corporate reports in this context.

What does the user want to know?

Perhaps, as we have noted, the principal deficiency of The Corporate Report in this area is that no research seems to have been undertaken to test the validity of the conclusions which the working party has reached. The same criticism may justifiably be levelled at the comments which are going to follow. Both are (unfortunately) expressions of opinion.

Taking the equity investor group first, the individual existing or potential investors who are savers are probably principally interested in –

- (1) the safety of their investment;
- (2) a fair return on their investment; and
- (3) comparability with alternative investments.

The type of corporate report which the working party suggests will help with the first question only. Unless corporate reports are extended to provide information which at the moment is available through stock market reports, the other two questions will not be answered.

The informational needs of the individual existing or potential investor who is speculating are also probably three-fold:

- (1) the potential growth in value of the investment;
- (2) the likelihood of an acceptable return on the investment while it is held; and
- (3) comparability with alternative investments.

None of these requirements is fully met by the corporate report envisaged by the working party, although the proposals for future-orientated information will go some way towards meeting the first.

Institutional shareholders undoubtedly need as much information about investee organisations as they can get. It should be remembered, however, that they are in a privileged position as a result of having their own experts to analyse whatever data is provided to them and that they will probably be able to obtain direct from investee organisations specific information which they need for their decision-taking processes.

Government agencies and similar bodies which invest in organisations are likely to be in a similar position to institutional investors except that they may have power given to them by law to obtain additional information.

So far as the investor group is concerned, therefore, a corporate report in the form suggested by the working party is likely materially to assist only institutions and government agencies and these will

in any case have other channels of information.

The university group's suggestions seem much more likely to help investors because its statements would include forecasts for the next three periods as well as the actual results for the current period and its two predecessors. As the proposal envisages comparing the actual results with the forecasts, investors and potential investors would have an opportunity of judging the ability of managements to forecast and thereby be able to form some judgement of the likelihood of the future predictions being fulfilled. The reservation which I have about the university group's proposals is that the information to be disclosed may add to the confusion of the uninstructed user, who is likely to have difficulty in understanding what figures are firm and what are estimates. This will particularly apply if he is faced with twelve columns of figures spread across a page, as seems to be suggested by the appendix to the draft statement dealing with a cash flow statement.

The working party says, justifiedly, that the needs of the loan creditor group are similar (though not identical) to those of the equity investor group. The same sort of people tend to make up the two groups, though there must be very few individuals who 'speculate' in this kind of security. Accordingly, loan creditors will place greater stress on the security for their lendings. If there is a debenture, the main interest will be in the potential break-up value of the assets covering the amount of the loan. If the lendings are unsecured, the principal interest will be that the organisation is likely to be viable into the foreseeable future. If the loans are guaranteed, interest will be in the guarantor. In any case, the kind of information that loan creditors will be seeking can be met by a limited amount of information from the corporate report.

As with investors, loan creditors are likely to find the university group's future-orientated information helpful in judging what the future support for their loans may be. Indeed, if the proposals for the statement of financial position were to be prepared along the suggested basis, they would be able to judge the organisation's break-up position. Whether, as we have discussed earlier, this would be helpful is another matter.

The employee group should not, in my view, be considered at all in the context of the corporate report. What its members want to know ought to be available on an *ad hoc* basis and not be dependent on a set of statements issued (say) once every year and, even then, some weeks in arrears. The recently published Industry Act 1975 and Employment Protection Act 1975 both provide the power to make organisations furnish trade unions with economic

information likely to be useful for collective bargaining purposes. Presumably this will be followed by statutory requirements for the disclosure of similar information to the employees themselves. Thus it seems that legislation is going to take care of the needs of this user group, quite outside the corporate report.

The needs of suppliers and customers are of such a nature that they are also more likely to be met outside the corporate report than through it. About the only information provided by such a report which will be helpful to these groups is an indication of the viability of the organisation concerned, from the point of view both of continuing in business and of meeting its debts when due. Other information needed by these groups, such as the availability of a certain line of goods or the continuity of an existing market, should be obtainable through direct approach to the organisation.

The government and the general public we have already discussed. My view is that both fall outside the sphere of the corporate report as such. Accordingly we are left with the analyst-adviser group. It, as already mentioned, really stands in place of the other groups. What is needful for equity investors, loan creditors and employees should be needful for the analysts and advisers and we have seen that not very much of that necessarily features in the corporate report. We have also noted that members of this group may have sources of information additional to those of other groups, which will assist them in forming their judgements. However, the problem is not nearly as simple as that. Members of this group work for government departments, institutional investors, stockbrokers, trade unions and so on, as well as being financial journalists. We accept that such bodies have wider informational requirements. But it seems illogical, somehow, that everyone should be provided with a full corporate report to meet the needs of a limited number of actual users.

As the working party points out, the benefits of providing information must be measured against the costs of providing it. At the present time an awful lot of endeavour is being applied to providing apparently incomprehensible information which very few people seem to want and even fewer to understand. But the corporate report is seeking to extend the amount of information published and the circle of its recipients. If my analysis of the situation is correct, this means even more endeavour with very little, if any, added advantage.

It also means that the practising accountant's position is going to be even more unenviable than it is already. As a result of the *Hedley Byrne* case, auditors and other reporting accountants can now find them-

selves liable to parties with whom they have no direct contact. The Corporate Report, if it becomes accepted that innumerable people other than existing shareholders have a right to rely on what the accountant says about the statements (or some of them) suggested in it, will open up the field of potential litigation to an alarming extent.

Conclusions

In this paper we have considered the suggestions of the working party and the university group and have identified benefits and difficulties arising out of each. Both sets of suggestions point a way forward, but more research is necessary to establish what information is really valuable to what classes of user and in particular what classes of user should, in practice, be provided with information. It is reasonable to assume that those who are responsible for administering monies entrusted to them by others should give an account of their stewardship. This means a report of some sort on transactions in the past. It is an equally reasonable assumption that those who entrust their moneys to others with a view either to providing themselves with an income or to enhancing their investment need some signposts as to what is likely to happen in the future. This means forecasts of some description.

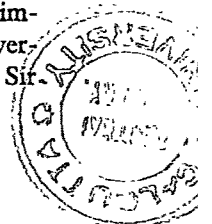
In the preceding section of the paper I have suggested that only a limited selection of the users identified really need very much information about organisations. This assumption has to be proved or disproved but I propose using it for the suggestions which follow. I am also going to assume the continuation of democracy and private enterprise in the UK and that it is desirable that organisations should be publicly accountable.

On this basis, I do not believe that corporate reports should be provided free to any of the classes identified by the working party. They should be prepared because it is right that organisations should give the maximum information practicable about their activities within the society in which they operate. They should also be subject to independent verification – the work of (possibly among others) practising accountants. However, the present wide distribution of the annual reports of listed companies is in my view an almost total waste. I should not want to see corporate reports distributed on such a scale; indeed I should like to see the law changed so that such reports need only be registered and filed with an appropriate government department, where they should be available to such members of the other classes of user as may be interested. Copies should be available for purchase from the reporting entities.

Because of organisations' public accountability auditors should not be required to report only to shareholders, but they should certainly not have to report to the public at large. As I have already suggested, the public should be represented by the government and the auditor's report should, therefore, be to the registering authority. This might help to overcome some of the potential risks of increased liability for professional negligence. The form of the audit report should also be reconsidered and the concept of the true and fair view should be abandoned. It is not one which is properly understood (even by some accountants) and the aim should be to make the auditor's report not a formality but something which is meaningful to, and easily comprehensible by, anyone with a real interest.

What I have so far said does not mean that the classes of user other than the government should not be provided with information. Organisations should be compelled to publish periodically key information which will *help* users. It seems to me that such key information should include chairmen's reports, certain descriptive information about the organisation and its management, the figure of distributable profit, the current market value of the organisation's securities (with comparative figures – possibly monthly – over the preceding period), market values of comparative securities on an industry basis, and a statement of the organisation's liquid position. In order to cover the field of potentially interested parties, this information should probably be given through the press and probably more frequently than annually. It should also be up to date. The auditors should report on the verifiable data but not on forecasts included in the information package.

So far I have ignored completely the activities of the European Commission. I very much fear that we are going to be faced with the necessity of producing annual accounts along the lines laid down in the revised EEC Fourth Directive on company law. However, I look upon this as a formality and hope that such accounts being on public record will suffice, without the need for inclusion in any 'information package'. The way ahead is to have much more pertinent information available than that to which the Commission seems to be wedded. In this respect the working party is to be congratulated on having provided some valuable signposts. However, so far as the majority of interested parties are concerned, the important thing is to meet their immediate needs. I do not think that the working party's corporate report achieves this and I believe it impracticable at the present time to adopt the university group's suggestions. Both should be, as Sir-



Ronald Leach says in the foreword to *The Corporate Report*, the starting points 'of a major review of the the uses, purposes and methods of modern financial reporting'. We are perhaps at the end of the beginning, certainly not at the beginning of the end.

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Pricing Policy in Inflation: A Management Accountant's Perspective*

John Sizer

Pricing is an extremely difficult and complex subject. In the introduction to his survey paper, Aubrey Silbertson¹ reminds us that the determination of prices has played a central part in economic theory for a hundred years, and 'yet it has been, and remains, a subject of considerable controversy'. The sixty-four page survey, supported by one hundred and fifty-three references (a small proportion of the vast literature on this subject) leaves one with the impression, as the title of the survey implies, that academic economists have been concerned mainly with the generalised behaviour of firms. They have theorised about how firms behave. They have also undertaken a limited number of empirical studies to determine how firms actually behave, and have used the results of these studies to revise and refine their theories, but these theories appear to have had limited impact on the managers who make pricing decisions. Thus, Alfred² considers 'company pricing policy is an area where the academic world has long retreated in despair of ascribing consistency of principles and rationality of practice'.

It will be recognised that in many multi-product firms pricing is not simply a process of setting figures at which the company's products are to be offered to customers, but is rather part of a broad and complex field also embracing problems of determining the characteristics of products to be sold, selecting customers, segmenting markets, choosing sales promotion methods, and determining channels of distribution. Selling price is only one of a number of variables in the marketing mix whose importance varies at different stages of a product's life cycle,

and the marketing mix should be seen in the context of the *marketing concept* which focuses decision making on the consumer:

'The marketing concept is a customer orientation backed by integrated marketing aimed at generating customer satisfaction as a key to satisfying organisational goals.'³

In considering pricing policy in inflation an attempt must be made to make a contribution which is of real practical value to the manager faced with the problems of formulating a pricing policy against the background of an increasingly dynamic and uncertain external environment, and which recognises that pricing is one element in a multi-dimensional marketing programme. To do this and to adequately discuss all aspects of pricing is unrealistic. This discussion paper is a management accountant's perspective of pricing of consumer products with a high rate of inflation under conditions of expansion and recession, with and without prices legislation, and with some extensions to the pricing of industrial products. In particular, it will examine the relationship between pricing policy, product portfolio, and market share strategy.

Managing Products over Life Cycles in Different Markets

It is suggested that the management of a multi-consumer product firm should be concerned with:

- (a) managing products or brands over their *life cycles*, in different markets, and therefore the sales, total contribution, separable fixed costs, separable assets employed and resultant cash flows associated with the products or brands;
- (b) planning and controlling the manufacture of products to ensure they are produced at a minimum cost for the agreed specification; and
- (c) planning and controlling the level of *common costs* and *common assets* employed that cannot be

*An amended version of a discussion paper presented to the Royal Economic Society Conference on 'The Rate of Profit in British Industry' at Sussex University, 22nd-24th September 1975.

¹Silbertson, Aubrey, 'Surveys of Applied Economics: Price Behaviour of Firms', *Economic Journal*, September 1970, pp. 511-576.

²Alfred, A. M., 'Company Pricing Policy', *Journal of Industrial Economics*, November 1972, p. 1.

³Kotler, Philip, *Marketing Management*, Prentice Hall, Englewood Cliffs, N.J., 1972.

directly associated with the manufacture and marketing of products but the level of which tends to increase with growth in product sales in the long term.

The framework that flows from this suggestion has been discussed elsewhere.⁴ The concept of the product life cycle and the market growth rate-market share matrix provides a basis for examining market share strategy, product portfolio, and pricing policy in a multi-consumer product firm.

Product Life Cycle

Many branded products cannot be expected to hold a permanent franchise in the market place. The concept of a product life-cycle has been widely discussed in relation to product classes, product forms and brands during the last decade. Buzzell⁵ describes the cycle as 'a generalised model of sales trend for a product class or category over a period of time, and of related changes in competitive behaviour'. It is hypothesised that at the *introduction* stage the product is put on the market; awareness and acceptance is minimal but so may be competition. The product begins to make rapid sales gains at the *growth* stage because of the cumulative effects of introductory promotion, distribution and word of mouth influence. The competition increases by expanding market volume and entering new market segments rather than by fighting for larger shares of the existing market. Eventually the rate of sales growth begins to taper off. There is a diminishing number of potential new customers, some unaware of the product and others not prepared to purchase. This is the *maturity stage* when firms are competing for market shares.

In the *saturation stage* for some products consumer resistance to change can be very high. Firm brand loyalties have built up and the last undecided prospects are very difficult to win over. The market can become flooded with products and crowded by competitors; competition for market shares becomes very tough. For other products, the growth of *private brands* and the successful introduction of new brands suggests lower consumer-resistance to change, and indicates brand switching is taking place. *Decline* sets in when sales begin to diminish as the

product is gradually edged out by new or better products or substitutes introduced by firms that have left the market. Private brands begin to appear during the growth stage, and their share of the market tends to increase. Rapidly increasing profits as well as booming sales are hypothesised at the growth stage of the life cycle, and that the rate of sales growth increases and reaches its peak in about the middle of the growth stage. Subsequent increases in sales volume are accompanied by a decreasing rate of growth. Usually, it is suggested that profits also will reach their highest level at the middle of the growth stage; a few competitors are operating in a fast expanding market. Once profits reach a peak they decline more rapidly than sales as a result of both declining prices and rising costs.

The intuitive appeal of the product life cycle, the existence of a theoretical foundation in the adoption process and the results of empirical tests lead Polli and Cook⁶ to the conclusion that the model is valid in many market situations. There is nothing fixed about the length of the cycle, or the length of the various stages of the cycle. These are governed by a number of factors including the rate of market acceptance, the rate of technological change and the ease of competitive entry. However, while the product life cycle represents a useful idealisation rather than a rigid description of all product life histories, it should lead accountants and product managers to recognise that:

- (a) products have a limited market life;
- (b) under conditions of competition and accelerating technological change a new product's life span is apt to be shorter than those of the past;
- (c) product sales and profits tend to follow a predictable course of introduction, growth, maturity, saturation and decline; and
- (d) products require different marketing programmes at each stage of the cycle.

Research⁷ suggests that many British firms do not recognise these characteristics.

What are the implications of the product life cycle for marketing strategy, including pricing strategy? Different marketing strategies are required for each stage of the cycle. Product managers must be prepared to shift the relative levels and emphasis given to price, advertising, product improvement, product differentiation, etc., during

⁴Sizer, John, 'Accountants, Product Managers, and Selling Price Decisions in Multi-consumer Product Firms', *Journal of Business Finance*, Spring 1972, pp. 70-85; and 'Accounting Information for Marketing Management', *Accountant*, 16th January 1975, pp. 67-70.

⁵Buzzell, Robert D., 'Competitive Behaviour and Product Life Cycles', in *Proceedings of the 1966 World Congress*, American Marketing Association, Chicago, 1966, p. 50.

⁶Polli, Rolando, and Cook, Victor, 'Validity of the Product Life Cycle', *Journal of Business*, October 1969, pp. 385-400.

⁷Cunningham, M. T., 'The Application of Product Life Cycles to Corporate Strategy: Some Research Findings', *British Journal of Marketing*, Spring 1969, pp. 32-44.

the different stages of the cycle. For example, contrast marketing strategies in the introductory and maturity stages. In the *introductory stage*, the marketing strategy is oriented at creating a new market and stimulating demand. The product manager's strategy may be to capitalise on the opportunity and implement a high-price policy with subsequent reductions, i.e. skim the market. Such a policy will attract competitors because of the high profit potential. Alternatively, the strategy may be to establish a broad base in the market and discourage potential competitors. A low price penetration policy may be adopted, designed to yield early high volume and slow down competitive imitation. Limited production capacity may rule out a penetration policy. At the introductory stage advertising is instrumental in creating initial awareness and interest of large audiences. Advertising's main task is to communicate the basic idea of the innovation and to persuade prospective buyers to try it. Product features are usually limited to one or two variations at this stage.

In contrast with the introductory stage, at the *maturity stage* marketing strategy is designed to achieve a competitive advantage by creating customer preference and loyalty. Product features are very important. The competing firms employ all possible means to differentiate their products and segment the market. Product variations are designed to appeal to and fit more closely the needs and desires of specific segments of the market. The growth of an individual company's sales volume depends mainly on the attainment of a larger share of the market. Advertising is no longer concerned with creating awareness of a new product but with brand appeal and distinguishing the company's product from competitors' products. In the maturity stage price competition is intense, and companies have far less discretion over price. In real terms prices will probably have fallen considerably during the growth stage as a result of economies of scale and competitive pressures. Prices in real terms may decline further in the maturity stage as a result of intensifying competition, including in some cases the introduction of private brands, but may eventually stabilise. The manufacturer may at this stage have to decide whether to produce only his own brands, to produce both his own and private brands, or specialise in the production of private brands.

Market Share Strategies

In formulating its pricing policy a company should consider not only the product life cycle characteristics of its various products, but also its market share

strategy in various markets. In particular it should consider the company's market position in relation to the market share-market growth rate (MS-MGR) matrix illustrated in Figure I.

Recent research by Buzzell, Gale and Sultan,⁸ sponsored by the Marketing Science Institute and the Harvard Business School, suggests that companies that have a high share of the markets they serve are considerably more profitable than their small-share rivals. Economies of scale and the so-called 'experience curve', market power, and quality of management are possibly interrelated explanations of the market-share profitability relationship. The authors show that as market share increases a business is likely to have a higher profit to sales margin, a declining purchases to sales ratio, a decline in marketing costs as a percentage of sales, higher quality, and higher priced products. The research also suggests that the advantages of large market share are greatest for companies selling products that are purchased infrequently by a fragmented customer group.

Because market share is so strongly related to profitability, Buzzell, Gale and Sultan rightly emphasise that a basic strategic issue for top management is to establish market share objectives and strategies, and they classify market-share strategies into three broad groups:

1. *Building strategies* are based on active efforts to increase market share by means of new product introductions, added marketing programmes, etc.
2. *Holding strategies* are aimed at maintaining the existing level of market share.
3. *Harvesting strategies* are designed to achieve high short-term earnings and cash flow by permitting market share to decline.

Before considering the application of these strategies to the market share-market growth rate matrix, and the implications for pricing policy, the relationship of product life cycle and MS-MGR matrix should be briefly explored. A number of hypotheses can be postulated. For example, companies operating in low growth markets are likely to have a higher proportion of their products in the maturity, saturation and decline stages of their life cycles than companies operating in high growth markets. Companies with high shares of low growth markets are more likely to introduce new products and/or wish to extend the life of existing products to maintain their position than companies with low

⁸Buzzell, Robert D., Gale, Bradley T., and Sultan, Ralph G. M., 'Market Share - a key to profitability', *Harvard Business Review*, January-February 1975, pp. 97-106.

Fig 1 Market Share – Market Growth Rate Matrix

		MARKET SHARE	
		HIGH	LOW
MARKET GROWTH RATE	HIGH		
	LOW		

shares of low growth markets. Those with a high share of a high growth market will be anxious to maintain their competitive advantage and are likely to innovate new products at a higher rate than companies with a low share of a high growth market.

Let us now consider the three broad groups of market share strategies, and the marketing and pricing policy implications, in the light of the hypothesised relationship between the MS-MGR matrix and the product life cycle. The Buzzell, Gale and Sultan data imply that in many cases even a marginally acceptable rate of return can be earned only by attaining some minimum level of market share. If a company's market share falls below this minimum, it can either increase its share or withdraw. Companies with a *low share of a low growth market* would therefore be strongly advised to withdraw, particularly if their products are in the saturation and decline stages of their life cycles. Such companies can either divest themselves of these so-called 'dogs'⁹ or alternatively pursue a vigorous harvesting strategy.

If, on the other hand, a company has a medium-sized share of a low growth market, and there is no dominant firm with a high market share, it may decide to pursue either a holding strategy or a building strategy with a view to becoming the dominant firm, either by acquisition or an aggressive marketing strategy. The latter would require a penetration pricing policy in support of the marketing strategy. However, it will be recognised that significant increases in market share in low growth markets are seldom achieved quickly, other than by acquisition; that they carry the threat of competitive reaction; and that they can be very expensive in the short run. Generally, therefore, the risk attached to building strategies in low growth markets is high, and a company would be wise to consider holding strategies and divestment or harvesting strategies in these markets. A holding strategy is a reasonable policy to pursue if a company has a medium share of a low growth market. It may have to learn to live with the market leader. The Buzzell *et al* data would suggest it should carefully control its marketing and R & D expenditure and charge prices somewhat below the average of leading competitors.

The choice between building and harvesting strategies becomes more critical for companies with

⁹The terms 'cash cows', 'dogs', 'question marks', 'stars', and the related concepts of product portfolio were developed by the Boston Consulting Group.

low shares of high growth markets. These are the so-called 'question marks'(?).⁹ Do you increase share, or withdraw, either by divestment to other companies pursuing a building strategy or by harvesting using a premium pricing policy and minimising marketing expenditure, R & D, and investment in new fixed or working capital? A company that decides to pursue a building strategy in a high growth market must be convinced that it has the financial, physical and managerial resources to implement its strategy and see it through a period of negative cash flows. Companies offering highly differentiated products which are frequently purchased can operate successfully with a low share of a high growth market, but may find it extremely difficult to operate profitably if selling infrequently purchased products to large, powerful buyers.

The most common market share strategy is the holding strategy, and this is particularly appropriate for companies with high shares in both high and low growth markets. The term 'cash cows'⁹ is frequently used to describe companies with high shares of low growth markets. Market leaders tend to produce and sell significantly higher quality products and services than their lower share competitors and are therefore able to command premium prices. Unless there is a rapid rate of technological change, low market growth rate necessitates a lower level of new investment in fixed and working capital than in high growth markets, and market leaders in low growth markets are high net cash inflow generators. This cash can be used to finance building strategies in high growth markets and holding strategies in high share high growth markets (the so-called 'stars').⁹ In the latter the company has to make significant cash investments in research and development expenditure, long term marketing expenditure to maintain its competitive position, and in new fixed investment and working capital as the demand for products increases. For example, the Fertiliser Division of Fisons Ltd. has financed the company's rapidly expanding Pharmaceutical Division.¹⁰

Thus, for groups of companies and for large multi-product multi-market companies, it is suggested that cash cows and divested dogs and question-marks finance holding strategies for 'today's stars' and building strategies for 'today's question marks'. The latter become 'tomorrow's stars', and 'today's stars' become 'tomorrow's cash cows'. What happens to today's cash cows? If the products in the low growth

market are entering the decline and saturation stages of their life cycles, and because of projected low growth or decline of the market, coupled with a rate of technological change which implies a high level of investment promising relatively low returns, a company may pursue a harvesting or divestment policy with a view to switching its investment into high growth markets. Alternatively, it may be necessary to harvest because cash requirements of the high growth markets demand this. If the company is harvesting, its marketing strategy and pricing policy should be oriented to short term cash generation. This implies a high premium price policy, and a low level of long-term marketing and research and development expenditure.

The relationships between product portfolio and market share strategy developed by the Boston Consulting Group are summarised in Figure II. The areas of the circles are proportional to the turnover of each company or product group within the group's or company's product portfolio. It is necessary to examine the influence on the relationships between product life cycle, market share strategies and product portfolio, marketing strategy, and pricing policy of, firstly, a high rate of inflation in a period of expansion and during a recession, and, secondly, of government controls on prices and profits.

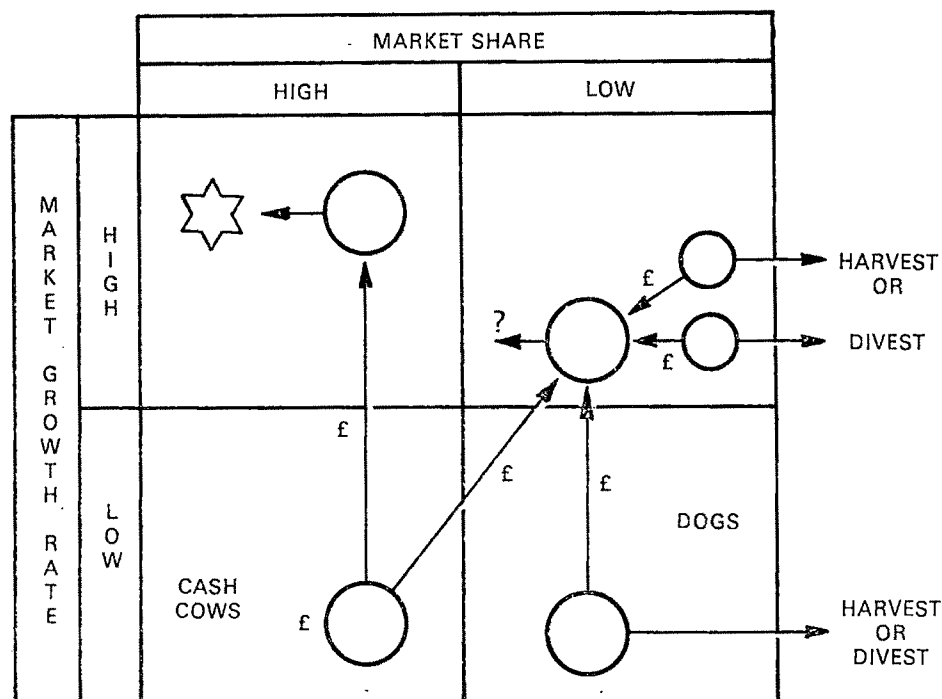
High Rate of Inflation in a Period of Expansion

In the absence of government controls on prices and profits, a company is likely to find buoyant and profitable markets in a period of high inflation and an expanding economy. The high rate of inflation will have a major impact on a company's investment in working capital. It is a major determinant of the rate of growth of investment in each stage of a company's working capital cycle. However, in expanding markets it is likely to be able to increase prices sufficiently to internally generate a higher level of cash flows, and higher accounting profits, which should allow the company to attract additional external funds. The high rate of inflation will also have a significant impact on new and replacement fixed investment and research and development expenditure, but access to external funds should not prove to be a limiting factor if the company is efficiently managed.

What is likely to be the impact of a high rate of inflation in an expanding economy on the product life cycle? The higher initial investment in new products is less likely to deter the introduction of new products when markets are buoyant and profitable, but, when combined with a rapid rate of

¹⁰Burton, George, *Corporate Objectives and Corporate Planning*, a paper presented to the East Midlands Management Centre, Loughborough, November 1971.

Fig II Product Portfolio and Market Share Strategy



technological change, it will encourage companies initially to *skim* rather than *penetrate*. For existing products there will be increased investment in working capital but bank finance should be available for this purpose. The buoyant markets could slow down the ageing of products and extend their market lives. On the other hand, the rate of innovation and technological change is likely to accelerate which may push established products more rapidly into the decline stage of their life cycles. In the absence of statutory controls a company will have less or no difficulty in passing on higher costs in higher prices. However, the constant pressure of rising costs on profit margins will mean that prices have to be continually under review and increasing constantly. Selling price becomes a more important variable in the marketing mix, as will be shown later in this paper.

In terms of market share strategies, a high rate of inflation in expanding markets should allow companies with low market shares to pursue holding and harvesting strategies. If harvesting, a premium price policy in segmented markets should be pursued, and if holding, it should still be possible to retain market shares and generate satisfactory profits and cash flows. The cost of building market shares is

likely to remain high. Building by acquisition will involve paying high earnings multiples, and building by internal growth will involve a major investment in fixed and working capital. Without a cash cow to finance such growth a company may have difficulty financing a building strategy. Companies with high shares of low growth markets should generate high net cash inflows from pursuing a holding strategy and charging premium prices for higher quality products, or maintain the pricing and product quality policy that has allowed them to establish and maintain a high market share. A substantial investment in working capital will be required by products in the high market growth rate-high market share segment. A cash cow is extremely valuable for this purpose. However, in expanding markets, companies are likely to find themselves in a capacity constrained sellers' market and can pursue, in the absence of government controls, a high premium price policy for quality products incorporating the latest technological innovations. Current and future profitability is likely to result in high P/E ratios and, therefore, external finance is likely to be readily available.

To summarise, in a period of rapid inflation and expanding markets and no statutory constraints on prices and profits, companies in all segments of the

MS-MGR matrix are likely to pursue a premium price policy. Prices will be constantly increasing. Companies with low market shares will find it easier to survive and will be able to pursue holding strategies, but may have opportunities to divest at attractive prices to companies pursuing building strategies. Building strategies remain expensive, and without a cash cow may be difficult to finance.

High Rate of Inflation During Recession

With a high rate of inflation during a recession, companies are likely to face a situation of rising costs, falling demand and declining margins. It becomes more difficult to pass on higher costs in the form of higher prices, and cost control increases in importance. Many companies, particularly those supplying industrial markets, find themselves in a buyers' market with excess capacity a common characteristic. While the high rate of inflation squeezes profit margins and internally generated cash flows, and access to external finance is restricted, companies solve their liquidity problems by running down stocks and cutting back research and development and capital expenditure programmes.

What is the impact of a high rate of inflation during a period of recession on the managing of products over their life cycles? The higher initial investment, cost of financing, and risk and uncertainty are likely to slow down the rate of new product introductions and competitive innovation. For existing products there will be increased investment in working capital when cash inflows are being squeezed. These factors and falling demand may push products into the decline stage and shorten their economic life cycles. On the other hand, the slowing down of the rate of innovation and technological change may lengthen the market life of existing products. Innovations that extend the life of existing products may require lower investment and a more acceptable degree of risk than new product innovations.

In these conditions, at the product policy level managements might make the following broad distinctions when analysing the worthwhileness of groups of products in relation to market shares and market growth rates:

Yesterday's Breadwinners – products in the saturation and decline stage of their life cycle which generate inadequate net cash inflows in relation to the cash investment that would be realised if they were abandoned. These are the first candidates for divestment decisions, particularly in low growth markets.

Today's Cash Cows – products in the growth and maturity stages of their life cycles which generate

high cash inflows and require limited additional cash investment in working capital. These products are important from the point of view of short-term survival and for financing future growth. In the conditions under consideration companies with low market shares are likely to have few of these products.

Today's Calves or Tomorrow's Cash Cows – these are products in the planning and introductory stages of their life cycles which require considerable cash investment and may involve a high degree of financial risk. They are mainly found in the high growth markets. These products are essential for the future development of the business. Companies with outstanding growth records often have shown that they seek out, find and reach for new products and markets. A key question is how many of today's calves can be raised by today's cash cows recognising the high failure rate of new products in certain consumer product markets and the pressure on profit margins of cash cows affecting their generating capacity. Without a cash cow, companies with low market shares in high growth markets will find in a recession they cannot support their calves. Companies with a cash cow may in these conditions find it easier to build market shares by acquisition than by internal growth. Many companies may decide to divest their question marks. Alternatively, companies may be prepared to carry short-term losses in order to allow their question marks to build up market share by pursuing a penetration pricing policy so they can capitalise on a high market share when the economy starts expanding again. Companies with high market shares in high growth markets must protect their position, if necessary by harvesting their cash cows as well as divesting of yesterday's breadwinners.

To summarise, in conditions of rapid inflation and recession the pressure is on profit margins and demand, and the pressure to divest products in the saturation and decline stages of their life cycles increases. For companies with low market shares it becomes extremely difficult to generate cash and profits. Many companies have limited control over pricing. They tend to be price takers in buyers' markets. Companies with cash cows can build up market shares in high growth markets, but will have to bear a short-term financial price. Companies with high shares of high growth markets must aim to protect and build up their market share.

The Impact of the Price Code

Under the Price Code manufacturing and service enterprises are required to relate increases solely to

increases in those costs which are 'allowable' under the Code, and also to keep their net profit margins within the level of earlier years. Enterprises engaged in distribution are required to keep both their net and their gross profit margins within the levels based upon trading in earlier years. In addition, companies in certain specified 'categories' have to pre-notify price increases to the Commission, to report periodically on profit margins or to record information on prices and profit margins.

Manufacturing and service companies in Categories I and II (in effect all enterprises with a domestic turnover of more than £5 million) are required to pre-notify price increases. If the increases do not conform with the Code the Price Commission can reject them. The distinction between Category I and Category II companies in manufacturing and service industries has now largely disappeared. Both are required to pre-notify price increases and the same pre-notification period (28 days) applies to both. Nevertheless, Category I companies remain of particular importance to the market share strategy analysis because of the size of their individual turnover (over £50m in the case of manufacturers and £20m for service enterprises) and because they account for some 50% of total manufacturing output. Many of these companies have a high market share in both high and low growth markets.

The control of net profit margins of the larger manufacturing and service enterprises is exercised primarily on the basis of periodic returns which those in Category I and Category II are required to make, normally quarterly, on their profits, sales and costs. Their profit margin performance is measured against a reference level which normally represents the average net profit margin in the best two of the five years of account up to 30th April 1973. It will be appreciated that this form of profit margin control does not encourage companies to increase their efficiency. In respect of market share strategy analysis an important question is how the unit to which profit margin control relates is determined. The Code provides that the unit is either the enterprise as a whole; the separate types of activity within the enterprise as a whole; or a 'split' into separate constituent companies or sub-divisions, provided the Commission is satisfied that these constitute 'a separate unit immediately below the level of the main Board of the enterprise as a whole for management, operational, and accounting purposes'. The implications on market share strategy and pricing policy of how the unit is determined will be considered, after the impact of the Price Code on company profitability and liquidity has been examined.

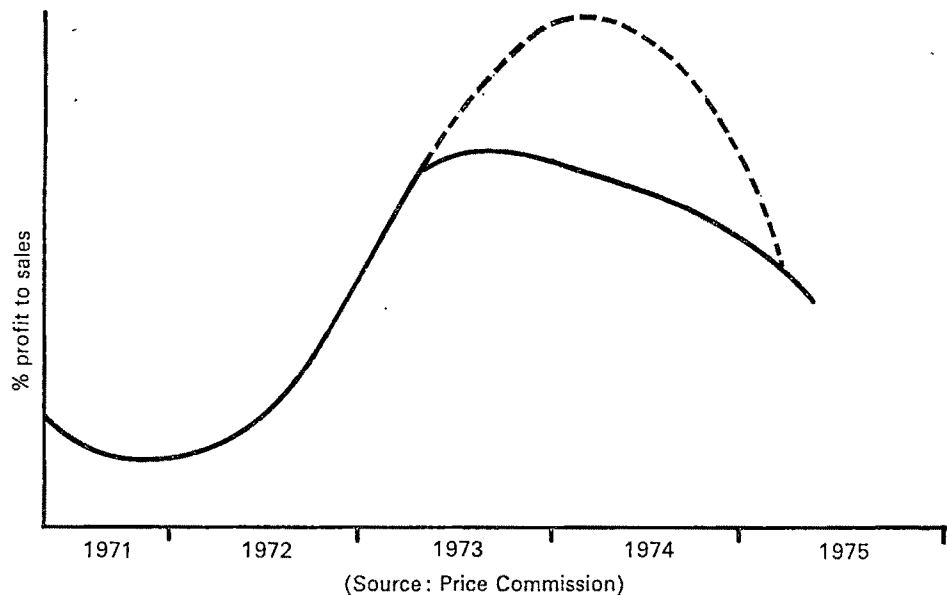
The Price Code and the Liquidity Crisis of 1974

The exceptionally high rate of inflation during 1974 had its major impact on the company sector's working capital requirements. A company facing a high rate of inflation during 1974 but nil growth in real terms found that inflation increased the investment in the early stages of the working capital cycle before any additional cash was generated from higher selling prices. Many companies planned for growth in real terms in 1974 and this growth also led to a build up in the investment in the early stages of the working capital cycle before any additional cash inflow was generated.

This situation was further seriously aggravated by the Price Commission criteria for allowing higher prices. The Chancellor of the Exchequer stated in his November 1974 Budget Speech that the high rate of inflation 'has made the operation of the price controls far more severe than was originally intended'.¹¹ In many companies it was not possible to increase prices sufficiently to cover the higher costs and leave adequate cash flow to finance the higher investment in working capital. Nor were the prices allowed by the Price Commission generating adequate profits to allow sufficient external finance to be raised. Not only were the Price Commission criteria too hard, but also the need to seek Price Commission approval for higher prices delayed the period between higher costs and investment in working capital occurring and the subsequent increase in selling prices. There was a further period before additional cash inflow was received. During the first half of 1974 it was not so much that an erosion of profit margins occurred but rather that the Price Code reference levels were inadequate given the high rate of inflation. In its Sixth Quarterly Report the Price Commission doubted that a serious erosion of profit margins had occurred throughout the period of control. Profit margins had fluctuated in the 70% of reference levels – first rising, then falling, but never moving very significantly from a middle figure of about 75% of reference levels. The Commission attributed this to the fact that the reference levels were greatly above profit margins at the time the Code was introduced, and that initially the Code was generous. However, in a period of rapidly rising costs it will also be difficult to maintain margins when there is a delay between when higher costs are incurred, when permission to increase prices is secured, and when the benefits of the higher selling prices occur. The

¹¹As reported in the *Financial Times*, 13th November 1974.

Fig III



Seventh Quarterly Report revealed a serious erosion of profit margins of manufacturing and service industries as a percentage of reference levels, as shown in Table 1. The Commission pointed out that the main responsibility for the fall in profit margins almost certainly lay with rising labour costs, which were not fully reflected in higher prices.

As illustrated in Figure III, the Commission also suggested in its Seventh Report that in 1972 and 1973 when the economy was expanding rapidly, profits rose rapidly, but the effect of price control was to hold back the increase. Now that output was no longer rising, profit margins were falling and the effect of price control was to push them down even faster. This disturbing hypothesis was partially confirmed by subsequent Price Commission Reports, which revealed further falls in profit margins of Category I and II companies (see Table 1). There was some improvement in the profit margins of Category I companies during the second quarter of 1975, when profit margins of the food and drink sector improved from 34.2% to 58.1% of reference levels. Nevertheless it can be argued that price control took the 'icing and the marzipan' off the top of the profits cake during 1972 and 1973. 'Icing and marzipan' had in the past

- (a) provided finance for additional investment in working capital during a period of expansion;
- (b) allowed companies to continue investing during leaner times;
- (c) provided the liquid reserves to see companies through a recession; and

(d) by providing sufficient liquid reserves to carry a company through a period of industrial unrest, possibly allowed companies to resist unrealistic wage claims during a recession.

The situation many companies faced was very similar to that of a company that is overtrading. Like a company that is overtrading, companies in 1974 budgeted for and achieved higher profits, but had a deteriorating cash position because the profits generated were not being translated into net cash inflows. The company facing a liquidity crisis in 1974, like the company overtrading, found that the rise in sales and profits was accompanied by a disproportionate increase in stocks, work-in-progress and debtors which more than absorbed the cash flow generated by the higher sales. For example, statistics prepared by the Food Manufacturers' Federation, based on a sample of 26 companies which between them accounted for 45% of the UK manufactured food sales during 1974, revealed a combined negative cash flow of £93 million in 1973 and £79 million in 1974. During this period working capital requirements increased by 54.3%, and net profit before tax but after interest to sales fell from 5.19% for 1971 to 2.56% for 1974.¹²

If a company has no access to external funds, not only must it finance additional investment in working capital from internally generated funds, but also dividends, interest payments and corporation tax,

¹²As reported in the *Financial Times*, 2nd April 1975.

TABLE 1

Analysis of Periodic Returns

Actual Margins Expressed as a Percentage of Reference Levels

	1973	1974			1975		
	<i>Fourth quarter</i>	<i>First quarter</i>	<i>Second quarter</i>	<i>Third quarter</i>	<i>Fourth quarter</i>	<i>First quarter</i>	<i>Second* quarter</i>
Manufacturing and Services: net margins							
Category I							
Total all industries	71.4	76.4	71.2	52.4	50.3	52.2	56.7
Category II							
Total all industries	65.0	60.7	61.8	54.3	54.7	51.1	54.9
Distributors: gross margins							
Total	95.1	93.9	91.3	91.4	91.6	92.3	91.8
Distributors: net margins							
Total	94.5	63.2	62.6	58.8	77.6	56.6	58.3

*Provisional

(Source: Price Commission Report to 31st August 1975)

and, hopefully, essential capital investment and research and development projects. With lack of cash to finance additional working capital, to pay dividends, interest and corporation tax, it was not surprising that many companies had to cut back and postpone planned capital expenditure and research and development programmes. More seriously, not only was there a lack of finance to allow essential capital expenditure to take place, there were also indications in the latter half of 1974 that many companies were having to cut back the level of their output because they could not finance their increased investment in working capital.

Revisions to the Price Code in the November 1974 Budget which were to be effective from December 1974 were expected to provide an estimated addition to profit of £800m in 1975. When the Price Code was presented to Parliament it contained further relief estimated at £200m. It is not clear on what assumptions about market conditions these figures were based. There was a strong possibility that many companies would not be able to charge the higher prices allowed by the revisions to the Price Code and at the same time maintain demand for their products. At the time of the November Budget there were clear signs of a recession in business activity. With the possibility of continued cost inflation and excess capacity in some industries, it was likely that many companies would not be able to secure higher profit margins. In its Seventh Quarterly Report the Price

Commission pointed out that the relaxations in the Stage 4 Code need to be seen very much in the light of price control pushing down profit margins faster.

In the latter half of 1974 some companies had to reduce their output and employment in order to reduce further their real investment in working capital. By cutting back their investment and research and development programmes, and their stock holdings, many were able to cope with their liquidity problems. In the first half of 1975 output and employment were being reduced because companies were facing declining demand for their products, a high rate of cost inflation, and eroding profit margins. These measures, the Chancellor's actions in his November 1974 and April 1975 Budgets to reduce company taxation, and the buoyant rights issue market suggest that the liquidity crisis is over for most companies, but the severe pressures on profitability remain.

Many companies will face increasing costs, falling demand and eroding profit margins during the remainder of 1975 and the first half of 1976. As excess capacity builds up price competition will increase, and survival of the fittest may become the name of the game. Many companies will emerge as leaner, fitter, and more efficient organisations. While the short-term liquidity crisis may be over, in the longer term companies must recognise the need to increase investment and productivity and also the

liquidity problems that may arise when the economy starts expanding again.

With this brief summary¹³ of the nature of the liquidity crisis industry faced during 1974 and the severe pressures on profitability it faces in 1975, the implications for market share strategy and pricing policy can be considered.

Impact of the Price Code during a Period of Rapid Inflation and an Expanding Economy

The Price Code limited the ability of companies to pursue a high price policy during 1973 and 1974. The requirement for manufacturing and service industries to relate price increases solely to increases in those that are 'allowable' under the Code set an upper limit for price increases. It also restricted a company's ability to change to premium price policies. The Buzzell, Gale and Sultan study suggests that companies with large market shares are likely to charge premium prices for a higher quality of product and be more profitable than their low share competitors. The Price Code may therefore strengthen their position. If they are charging premium prices they can partially maintain this policy in buoyant markets, while the smaller company cannot automatically follow the price leader and charge the premium prices the market is prepared to pay. Unless the small market share company had differentiated its products and charged a premium price in the past, its ability to generate adequate cash flow in 1974 was severely limited by the Price Code.

Large companies may benefit from the margin control for two other reasons:

1. The Buzzell, Gale and Sultan research also suggests that as market share rises, rate of asset turnover rises only somewhat, but profit margin on sales increases sharply. This suggests that companies with large market shares may have higher reference levels for margin controls, and therefore be in a better position to take advantage of buoyant market conditions.
2. Large companies may have products in low and high growth market segments, and both high and low shares of these segments. If the unit for margin control combines the various segments, high margins in the low growth high share segment can be offset against lower margins in the high growth segments. The larger the unit of control the greater the manoeuvrability of the large companies.

About half of the Category I companies and three-quarters of the Category II companies are using the enterprise as a whole as the unit for profit margin purposes, the remainder being 'split' either by reference to activity or by reference to constituent companies or subdivisions.

Despite these suggested advantages of large share companies under the Price Code, the liquidity crisis of 1974 had a severe impact on many of these companies. Even with a cash cow, building strategies became extremely difficult to finance. Much of the cash generated by high share-low growth segments was required for financing additional investment of working capital. In many companies financing of high share-low growth segments became virtually impossible, and many had to postpone new product introductions, reduce product variety, and divest of products in their saturation and decline phases. Companies were in the same position as the dairy farmers who faced rising costs and constant selling prices in 1975. The farmers had to cull their herds of cows still capable of producing milk yields that had been acceptable in the past, but could not afford to restock their herds with young heifers because the remaining cows in the herd could not generate sufficient cash to support the same proportion of heifers as in the past. In fact, many of the policies to be expected during a recession with rapid inflation had to be implemented by companies during the boom period. Thus, the Chancellor stated in his November Budget:

'The impact of inflation on the company sector risks forcing thousands of firms to restrict their output and lay off workers in the coming winter not through lack of demand, but simply through lack of working capital.'¹⁴

In these conditions for many companies market share strategy was either hold or harvest, and in many cases harvesting meant divesting to release working capital. Pricing policy was also clear: raise prices whenever the Price Code permits and pursue skimming policies for new products. In effect, both sellers and buyers were price takers in a sellers' market, taking what the Price Code would allow; the Price Code being the justification for the sellers to take the maximum permitted from the buyers. The companies with large market shares were likely to be in a position to be able to take more from the buyers than those with small market shares because of their higher reference levels. Building strategies could not be financed, and therefore opportunities to divest by sale for companies with low market shares were likely to be highly restricted. One

¹³For a fuller discussion see Sizer, John, 'The Management Accountant's Contribution to Solving the Company Liquidity Crisis', *Proceedings of the Institute of Cost and Management Accountants' National Conference 1975*, pp. 1-55.

¹⁴*Financial Times*, 13.11.74, op. cit.

exception to this was the overseas company wishing to build a share in the UK market. There were ample opportunities for companies wishing to pursue a long run building strategy financed by an overseas parent.

Companies were able to pursue a premium pricing policy in export markets in 1974. Exports were 40% higher in the third quarter of 1974 compared with the same quarter of 1973; this was largely the result of a rapid rise in export prices rather than growth in volume. With tight price controls in the UK it was not surprising that companies sought to raise their export prices.

Impact of Price Code during Period of Rapid Inflation and Recession

When the economy was expanding in 1973 and 1974 the effect of the Price Code was to force many companies operating in a sellers' market to act as if they were in a buyers' market. Their ability to charge premium prices, generate cash, finance new product introductions, undertake research and development projects, etc. was restricted. What has happened in the recession? Many managements find themselves in a new situation: rapidly rising costs, falling demand, and constantly eroding profit margins. Some of the implications for those pricing consumer products and industrial products are examined later in this paper. In summary, for many companies the Price Code is less important. Their ability to raise prices is, in many instances, determined by market conditions not the Price Code; the optimal price being below the limit allowed under the Price Code. However, these companies may still apply for permission to raise their prices to the Price Code limit so they can do so when market conditions are appropriate. For some companies it may not be possible to charge the optimal price in some markets because of the Price Code, and it may remain a factor restricting their pricing decisions.

For companies with high overseas earnings or overseas parents, conditions are ripe for increasing market share in the UK. The cost of building strategies may be high in the short run, but the opportunities are also excellent. Such strategies imply a low price policy and a willingness to carry trading losses in the short-term. As excess capacity builds up and price competition becomes intense companies with low market shares will find they have little control over prices and the problems of survival may become overwhelming. The dangers of cutting margins to maintain volume are considered in the concluding part of this paper. There will be opportunities for companies with high overseas earnings

or overseas parents to build market share in the UK by acquisition. The SKF acquisition of Sheffield Twist Drill and the International Nickel acquisition of Daniel Doncaster might be viewed in this context. An acquisition which allows a company operating below its reference levels to combine for price control purposes with a company whose prices are restricted by its Price Code reference levels may also prove attractive.

Individual Pricing Decisions in Inflation

A full discussion of individual pricing decisions in inflation is beyond the scope of this paper. However, some of the policy implications for individual pricing decisions in a high rate of inflation should be briefly highlighted.

While selling price is an important variable in the mix, there was until recently a general reluctance to review selling prices more than once or possibly twice a year. It can be a very expensive and complicated business altering prices. Silbertson¹⁵ concludes that 'nearly all the evidence supports the view that the home market prices of manufactured products tend to be stable for months or even years at a time'. Reviewing selling prices frequently tended to form part of the annual preparation of the budget. Between price reviews product managers manipulated the non-price variables in the marketing mix. The high rate of inflation has increased the importance of pricing decisions. The continuous pressure on profit margins has forced companies to review prices more frequently, and in many cases continuously. It is interesting to observe that in their joint statement to shareholders, on 13th May 1975, the Chairmen of Unilever Ltd. and Unilever N.V. complained that in the United Kingdom price increases could normally only be implemented at three monthly intervals. The introduction of the Price Code has provided companies with justification for price increases, and also resulted in a more systematic review of pricing decisions in the context of a company's pricing and marketing policy. An essential first stage in the pricing decision is a comprehensive monitoring system that signals the need for a price review. Such a system might collect some or all of the information contained in Table 2.¹⁶ This type of monitoring system is likely to identify some of the shifts in demand that are occurring in the market place. In

¹⁶Adapted from Oxenfeldt, Alfred R., 'A Decision Making Structure for Price Decisions', *Journal of Marketing*, January 1973, pp. 48-53.

¹⁵Silbertson, Aubrey, op. cit., p. 569.

this respect it is important that the management accountant recognises that the marketing manager requires a system of periodic reporting of current and forecast segment profitability, i.e. the profitability of different products in different markets. The marketing concept requires data accumulation, budgeting and performance measurement to be focused on market segments. Segment reporting has become more relevant, not only because the high rate of inflation and the Chancellor's budget measures affect products and markets in different ways, but also because the significant shift of net incomes that has taken place makes current socio-economic groupings unreliable guides to disposable incomes. When making pricing and other marketing mix decisions, marketing managers require financial information on the implications of these shifting patterns of consumer demand on product and market profitability. This implies segmental reporting. Companies marketing goods in export markets should also have a system of segmental reporting which indicates the profitability of products in these markets.

An interesting and useful approach to examining

profitability of products and markets, and customers within markets, which can also prove effective in communications with marketing managers, is the use of contribution graphs or pictures as illustrated in Figure IV. Equi-contribution curves are derived by multiplying unit contribution on the vertical axis and units on the horizontal axis. They assume constant marginal cost over the relevant output range. The graphs can be segmented to show high and low profitability areas. Products in markets, or markets for a product, etc. can be plotted. Products in the bottom left hand segment are candidates for disposal, while the most profitable products are shown in the top right hand segment. It will be recognised that in the absence of price increases the impact of a high rate of inflation in a period of recession is to move the products towards the bottom left hand corner, and in a period of expansion towards the bottom right hand corner. An interesting example of what is possible is the Contribution Pictures Computer Program developed by T. E. Heywood in association with ICI Ltd.¹⁷

These contribution graphs or pictures do not show the cash flow generated by products but could be adapted to produce equi-cash curves by substituting net cash inflow per unit for contribution per unit. In determining net cash inflows, incremental cash flows *not* historical cash flows must be considered. For example, if a company is running down its stocks there would be a nil incremental cash outflow for material cost, but if the sale would result in further production the relevant material cost would be the replacement cost.

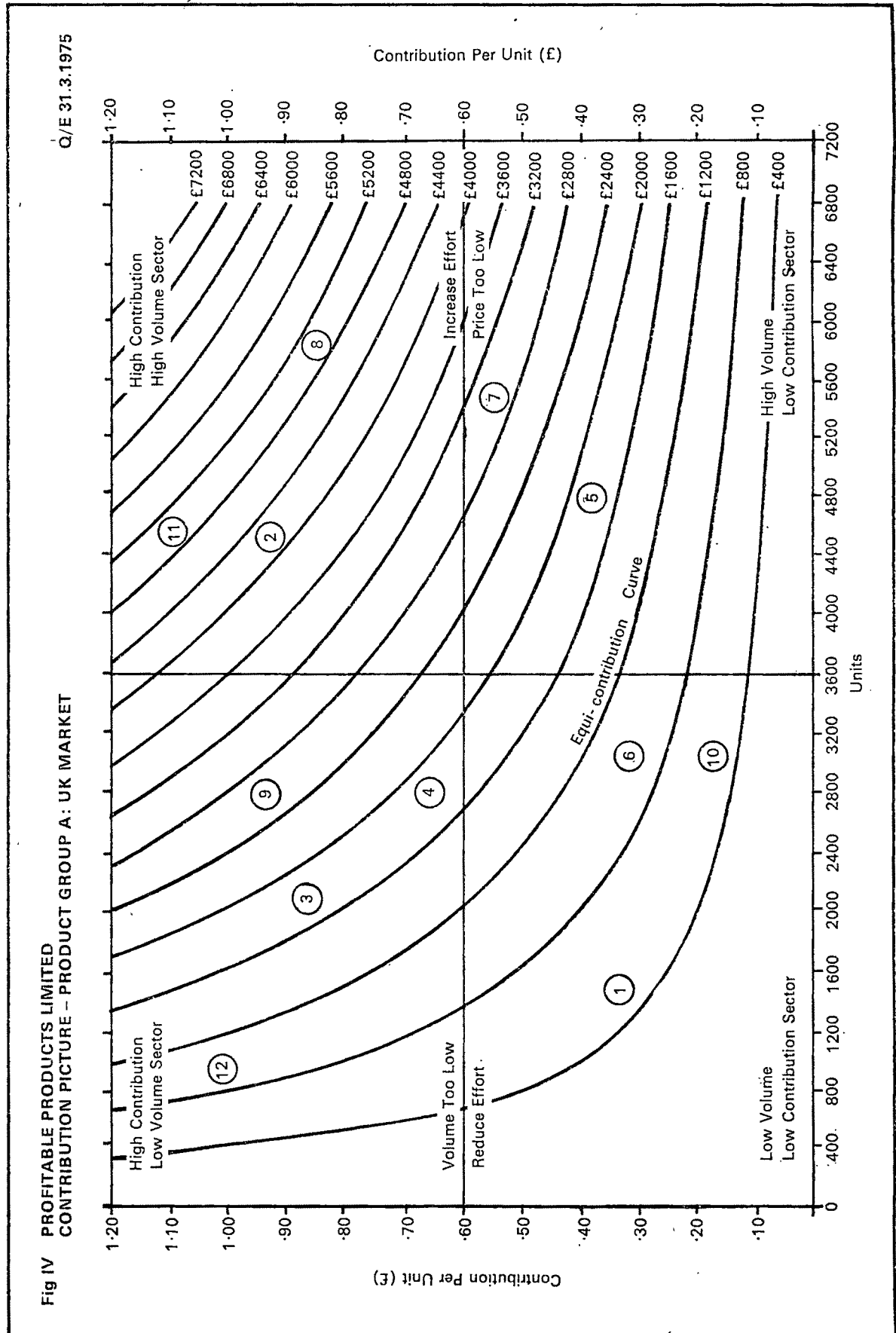
The monitoring system, including the segmental reports and contribution pictures, may signal the need to review prices. Product profit-volume charts may be used for this purpose. For example, consider the product profit-volume chart for a consumer product in Figure V(a). Assume constant marginal cost and product-related period costs over the relevant output range. CC is the Contribution Curve. It shows the relationship between demand in units, direct product profit, total contribution, and break-even points for alternative prices. At a selling price of £18.50 the estimated demand is 7,200 units, total contribution is £46,800 and product profit is £21,800. The determination of the contribution curve has been considered elsewhere.¹⁸ What is the

TABLE 2
Price Monitoring System

- 1 Sales, in units and value:
 - (a) previous year comparisons
 - (b) different markets/channels comparisons
 - (c) budget v. actual comparisons
 - (d) forecast v. budget comparisons
 - (e) forecast v. actual comparisons
- 2 Competitors' prices and conditions of sale
- 3 Enquiries from potential customers about a product
- 4 Sales at 'below list' prices:
 - (a) measured as a percentage of total sales
 - (b) revenue as a percentage of sales at full list price
- 5 Types of customers getting the most and largest price reductions
- 6 Market shares in individual markets
- 7 Present and forecast product costs:
 - (a) production, marketing, etc.
 - (b) fixed, variable
- 8 Product unit and total contributions in different markets
- 9 Price complaints:
 - (a) from customers
 - (b) from salesmen
- 10 Stocks of finished goods at different points in distribution chain
- 11 Customers' attitudes to company's prices, packaging, etc.
- 12 Number of lost customers (brand switching)
- 13 Enquiries and subsequent purchases

¹⁷Heywood, T. E., 'Contribution Pictures can tell the Basic Story', *Management Accounting*, November 1971, pp. 327-331.

¹⁸See Sizer, John, *Journal of Business Finance*, op. cit.; and 'A Risk Analysis Approach to Marginal Cost Pricing', *Accounting and Business Research*, Winter 1970, pp. 30-38.



impact of a high rate of inflation in a sellers' market on this chart? Period costs, variable costs, and break-even volume for existing prices are increasing continuously, but it is likely that the income elasticity of demand effects will allow the higher costs to be passed on in higher prices. The contribution curve is likely to move upwards and to the left and compensate for the increase in variable costs and period costs. The company is likely to generate a high total contribution and direct product profit in money terms at the optimal price, assuming the Price Commission allow the company to charge this price. The Price Code places an upper limit on the price that may be charged. The optimal price may be below this price limit but many companies appear to assume, during a period of rapid inflation in buoyant demand, that the optimal price is that allowed by the Price Commission or some higher price. It has been suggested that companies that were pursuing a premium price policy prior to the introduction of the Price Code will have a higher cut-off price than those companies charging lower prices. These effects of inflation are illustrated in Figure V(b). While increases in costs and break-even volume for a given price can be forecast with a reasonable degree of accuracy, the move in the contribution curve cannot. An effective monitoring system should assist in this direction.

Consider now the situation in a period of a high rate of inflation during a recession. Period and

variable costs continue to rise continuously, but as real disposable incomes fall the income elasticity effects no longer compensate for the increase in costs. The contribution curve may move downwards and to the left as consumers move on to lower indifference curves. The shape of the contribution curve may change as demand switches to cheaper products. As illustrated in Figure V(c), a company can find itself in a position of rising costs, falling demand, and disappearing total contribution. This situation is forcing many companies to take a long hard look at their costs, both variable product costs and period costs. A similar analysis can be hypothesised for producers of industrial products. An important difference is that the customers in these markets are professional buyers. In a recession companies marketing industrial products can very quickly find themselves in a buyers' market. A similar profit-volume chart can be developed, for example, for a firm producing industrial components, by substituting alternative percentage contribution margins or PV ratios for alternative prices. The effect of a high rate of inflation in a period of recession is very similar. Period costs are rising, contribution margins are eroded by increasing variable costs, and demand is falling at the same time. It is very difficult to raise prices in a buyers' market, and if losses are to be avoided it is necessary to reduce period costs. Figure VI contrasts the operating profit in April 1974 with the operating loss of April 1975 of a

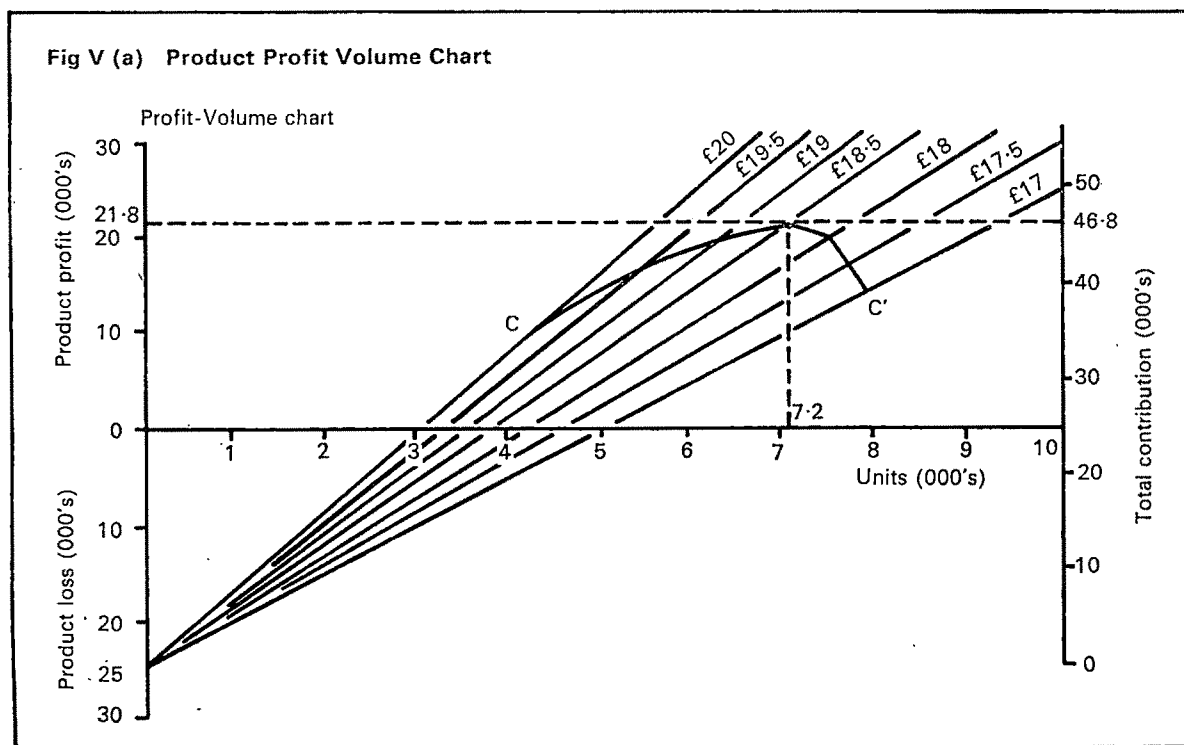


Fig V (b) Effect of inflation in a sellers' market

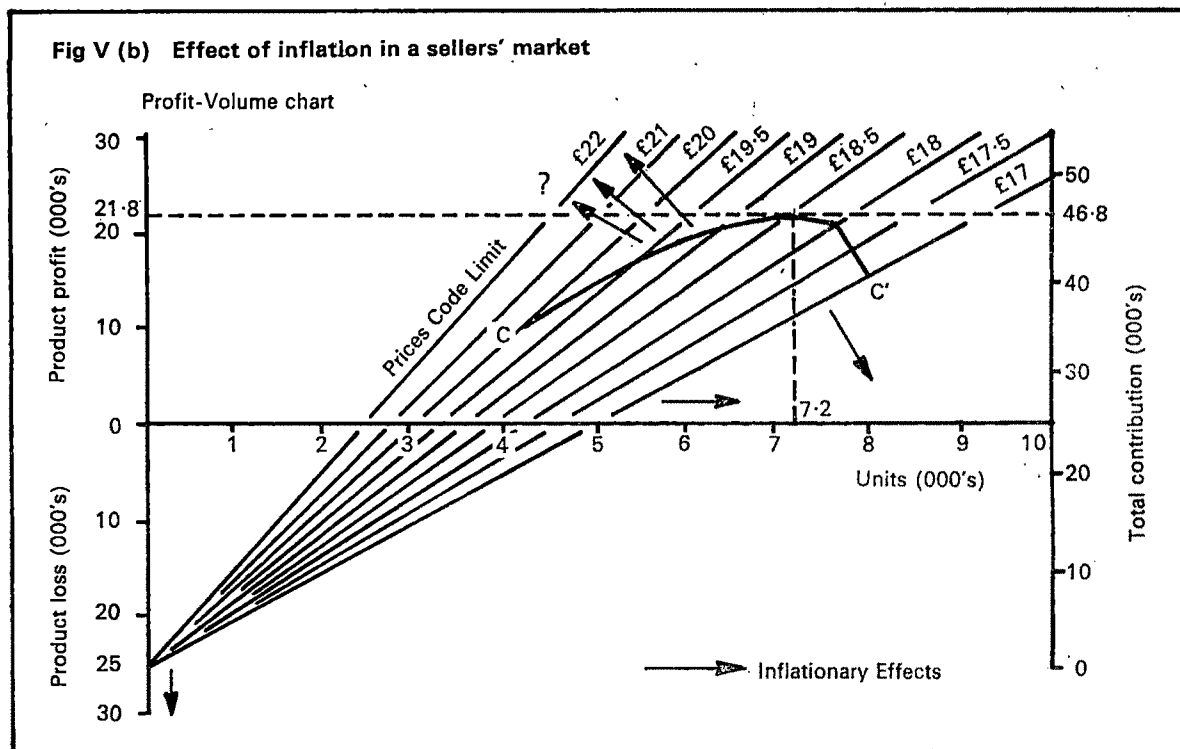


Fig V (c) Effect of inflation in a period of recession

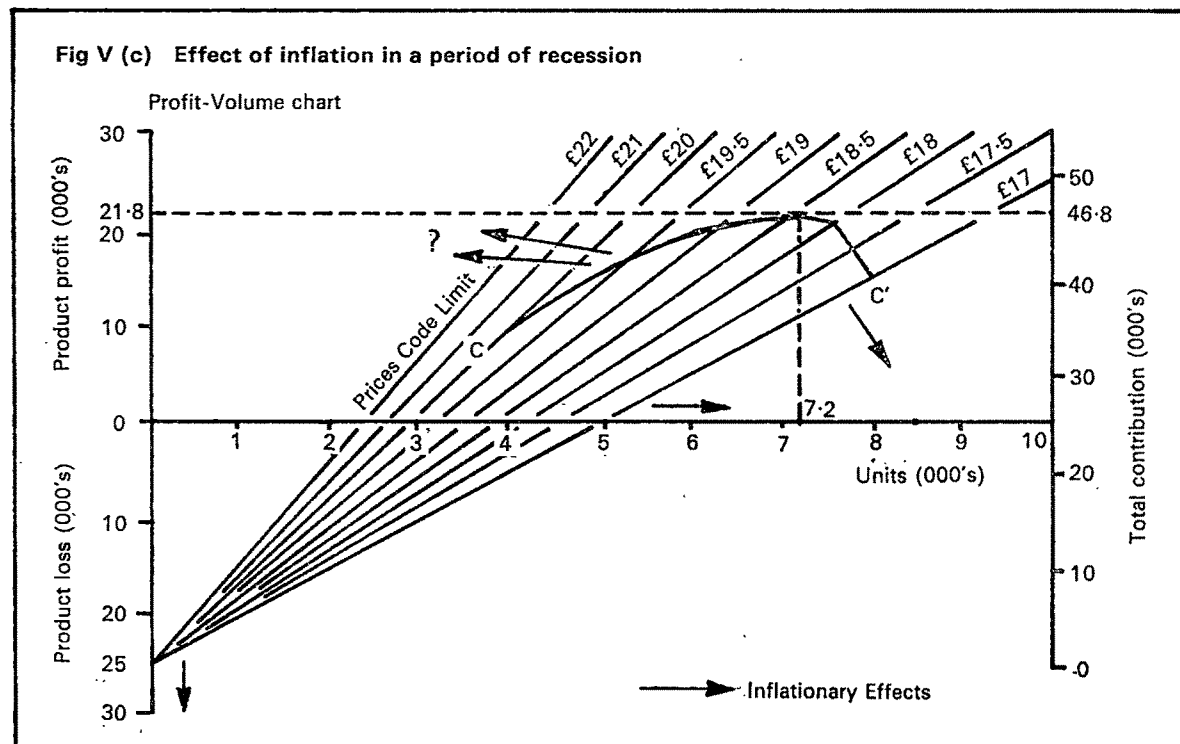
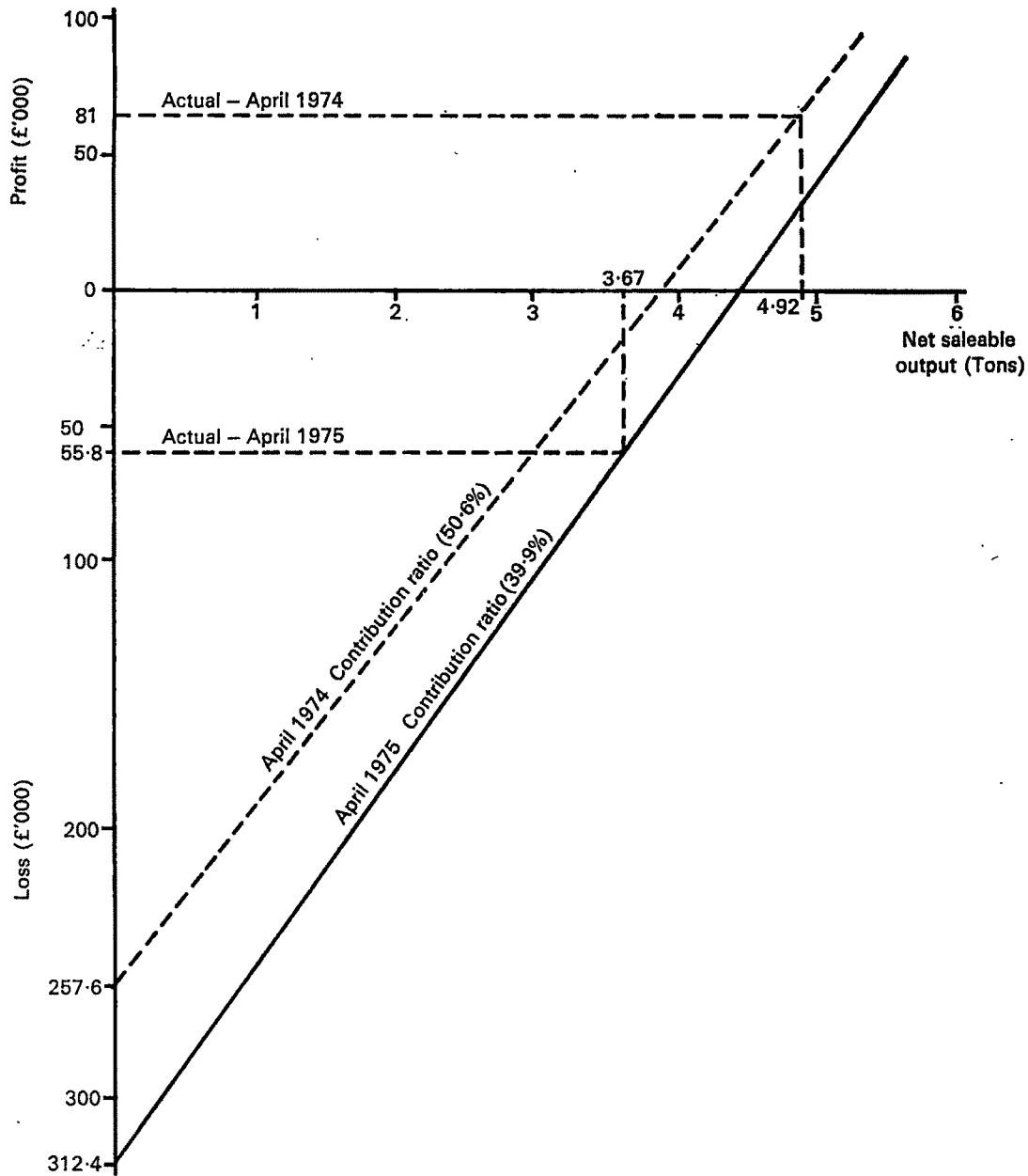


Fig VI Profit Volume Chart – April 1975 – Comparison of 1974 and 1975



company producing a range of industrial components. It will be noted the company is earning a lower contribution ratio on a higher selling price, but this is not sufficient to compensate for the higher period costs and the lower demand.

The above analysis not only highlights the need for effective systems of cost control and cost reduction programmes,¹⁹ but also the importance of recognising

that normally margins are more important than volume when a company has liquidity and profitability problems in a declining market. A company that attempts to maintain or increase volume by reducing prices and cutting margins in a period of rising costs and declining market size may suddenly find it has no margins. It was recently reported in the *Financial Times* (15th April 1975) that John Wilson, a Director of ICI Europe, had found as a result of research done in the company at Brussels that a 4%

¹⁹See Sizer, John, *op. cit.*, note 13 above.

price cut would wipe out profits, while volume could be reduced by some 13% before profits disappeared. This is typical of the situation many companies face. It is interesting to speculate on the effect on BSC's cost-volume-profit relationships of its recent decision to offer temporary rebates on the price of cold reduced coil and sheet and hot rolled coil and sheet, representing about 8% and 13% respectively off the base price of these steels; and also on the effects of price cuts by car manufacturers in the UK market.

Conclusion

In the conclusion to his survey paper, quoting Williamson,²⁰ Silbertson²¹ stresses a view, frequently expressed in his paper, that 'price policy is one aspect only of the competitive behaviour of the firm, and looked at alone gives a partial picture'. In this paper an attempt has been made to relate pricing policy to other aspects of competitive behaviour, particularly market share strategy and product

portfolio, under conditions of inflation. The result is still a partial picture, but it does suggest that under conditions of rapid inflation pricing policy and pricing decisions increase in importance. It has also been postulated that the statutory Price Code strengthens the position of firms with high market shares, and of companies with products in both low and high growth markets. The impact of the Price Code and the effects of falling real disposable incomes on company liquidity and profitability has been outlined. Proposals by the TUC, when the £6 per week limit on wage increases was being negotiated, to tighten the Price Code; proposals by some Trade Union officials for a prices freeze; and the current negotiations to limit price rises for selected product categories should be evaluated in this context. As Wedgewood Benn has emphasised,²² higher investment and higher productivity remain the key to the country's long-term survival, which implies, if we are to remain a predominantly private enterprise economy, a large and sustained increase in the profitability of the company sector. A tightening of the Price Code or a prices freeze are not compatible with this.

²⁰Williamson, O. E., 'A Dynamic-Stochastic Theory of Managerial Behaviour' in *Prices: Issues in Theory, Practice and Public Policy*, ed. Phillips, A., and Williamson, O. E., Philadelphia: University of Philadelphia Press, 1968.

²¹Silbertson, Aubrey, op. cit., p. 575.

²²Wedgewood Benn, Anthony, *Trade and Industry*, 4th April, 1975.

Shareholder Behaviour in the New Issue Market: A Final Progress Report

R. J. Briston and C. S. Greensted

Introduction

The object of this paper is to outline the progress to date of the research project relating to shareholder behaviour in new issues on the London Stock Exchange during the period 1957-1966 and to state some of the conclusions which have so far been drawn. The background to the project has already been set out fully in two previous papers. The first of these¹ represented a preliminary report on the results of the analysis for the two years 1957 and 1966, while the second² described the results for 1963 and 1964 and compared them with 1957 and 1966. It is not intended here to describe the purpose and organisation of the project in detail and interested readers are referred to the two earlier papers. Suffice it to say that the project was begun in October 1969 and the bulk of the work was carried out by a research assistant, Mr. D. King, whose appointment was financed by the SSRC for a three year period. However, for various reasons, including overcrowding at Companies House, changes in supervisory staff and the failure of certain companies to keep records of past shareholders, it was not possible to complete the analysis of the seventy companies in the sample within the period of his appointment. Fortunately, Mr. King continued to work on the project in his spare time and this work, augmented by assistance by two student volunteers, has enabled the project to be completed within its original terms of reference. This paper presents the data which has been collected and subjects it to some preliminary statistical tests. In the course of these tests it was discovered that certain additional information would be necessary before the results could be confirmed. The nature

of this information and the programme for its collection are set out below.

Data Collection

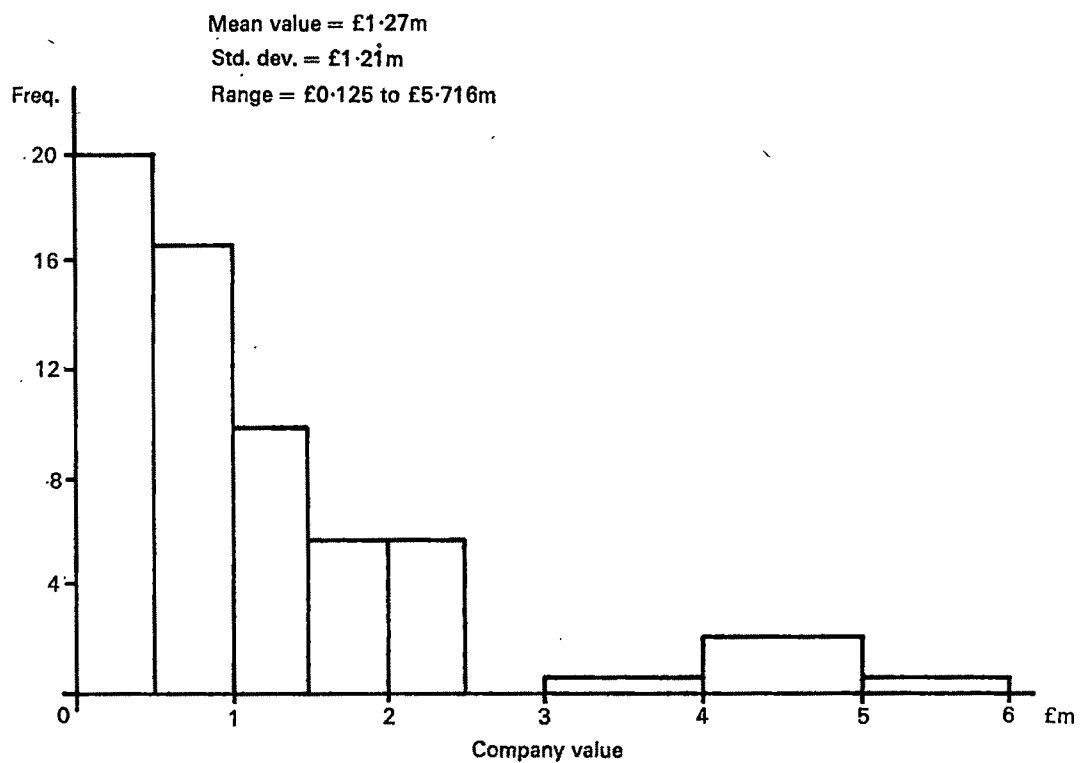
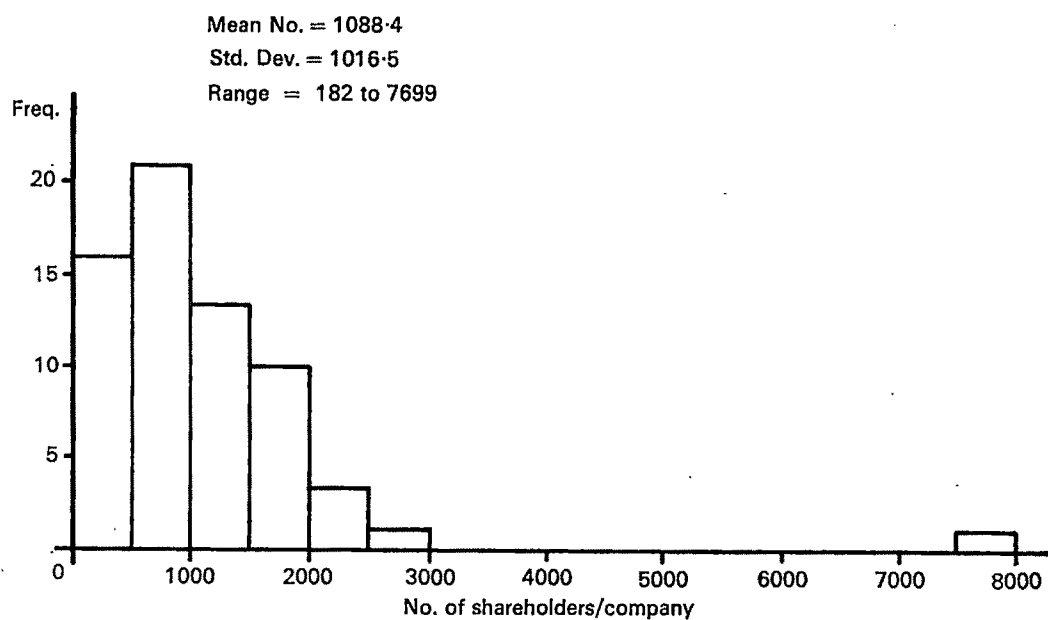
The main object of the project is to ascertain the actual behaviour of a large sample of shareholders over the past twenty years. Companies which were offering their shares to the public for the first time were chosen for this purpose because they provided a substantial body of shareholders all of whom commenced holding at the same point in time. For each of the ten years 1957-1966 seven companies were selected in such a way that there was a good spread of large and small companies, of industrial, financial and property companies, of well-known and more obscure companies and of different methods of issue. At the moment 65 of these companies have been completely analysed and work is being completed on the remaining five by student volunteers. Figure 1 shows the distribution by value of the 65 companies. To an extent this understates the role of the larger companies, for the five outstanding companies include Grand Metropolitan and the Charterhouse Group. Even with these included the mean value is unlikely to move above £1.5m, which for the period concerned would be a fairly typical valuation for a newly-quoted company.

An alternative measure of company size is the number of shareholders who purchased shares at date of issue. This measure may act as a surrogate for the degree of public interest in the company and the company's public image. The number of shareholders per company ranged from 182 to 7,699 and its distribution is shown in Figure 2. It is interesting to note that the study has so far involved tracing the shareholding history of 70,745 shareholders in total with an initial share valuation of £82.5m. With the addition of the five outstanding companies these figures will rise to above 75,000 and £90m respectively.

The information relating to shareholder behaviour in these companies has been based upon an analysis

¹R. J. Briston, C. R. Tomkins, and D. King, 'Shareholder Behaviour in the New Issue Market: A Preliminary Report', *Accounting and Business Research*, Summer 1971, Vol. 1, No. 3, pp. 233-241.

²R. J. Briston, 'The Organisation of Research into Shareholder Behaviour', *Journal of Business Finance*, Spring 1972, Vol. 4, No. 1, pp. 24-30.

Fig 1 Distribution of Company Value**Fig 2 Distribution of Shareholders**

of their share registers. Because transactions during the first few weeks after the issue are based upon the letter of allotment there is no public record of deals between the date of allotment and the date of issue of the first certificates. As a result it is impossible to trace the activities of short-term stags. However, all transactions after the date of first registration are recorded in the register of members of the company, and for each of the seventy companies concerned the following information has been collected:

- (i) Listing of shareholdings by number of shares held at date of first registration.
- (ii) Analysis of transactions undertaken thereafter by each shareholder recording, where appropriate, additional purchases, partial sales and date of cessation of membership. Cessation by death was recorded separately to distinguish it from cessation by sale.
- (iii) Classification of different shareholders based both on number of shareholders and number of shares held both at date of first registration and at date of 1969 annual return.

The most important information is that relating to the length of holding, for this provides evidence not otherwise available of the degree of inertia of private shareholders and the stability of their behaviour.

The data was collected in the form of percentage cumulative cessation within i years in the same manner as adopted in the previous papers and a sample is shown in Table 1, and in a sketched form in Figure 3.

The information in Table 1 shows the cumulative percentage of shareholders by number of shareholders and not by size of holding who cease to be members each year by virtue of the sale of their holdings. Thus, in the case of Great Portland Estates Ltd., 49.6% of the shareholders at the date of first registration ceased to be members during the next twelve months. A further 14.8% ceased to be members during the following twelve months so that within two years of the date of first registration 64.4% of the original shareholders had ceased to be members. Similarly, at the end of ten years 84.3% of the original shareholders had sold all of their shares, leaving only 15.7% of them remaining as members.

Although it would have been useful to compute the pattern of cessation by reference to the value of holdings this was rendered impossible by changes in shareholdings due to additional purchases and partial sales and to changes in capital structure due to rights issues, scrip issues and acquisitions.

At the outset of the project, annual returns were obtainable only up to 1969 and thus the 1957 issued

companies show cumulative cessations up to 12 years from date of issue ($i = 1, \dots, 12$), but the 1966 issued companies have only three years data ($i = 1, \dots, 3$). As explained below it is planned to extend all returns up to 1974 which will give a more reasonable basis of comparison with at least eight years of cessations for all companies.

Analysis of the Data

1 Differences in cessation behaviour between years of issue

This analysis was concerned with identifying differences, if any, in the rates of cessation between years of issue. The economic environment altered over the years 1957 to 1966 and also various taxation changes were introduced, both of which might be expected to have an effect on shareholder behaviour (particularly with regard to sales).

The analysis compared cumulative cessations within i years for the issue years 1957 to 1966. For this purpose the data was rearranged as in Table 2 for each year of cessation which indicated a standard analysis for differences between means of treatments (i.e. issue years). However, since the nature of the underlying distributions was unknown, a Kruskal and Wallis³ distribution free test was applied for $i = 1, \dots, 4$. It was found that the K and W statistic was not significant at the 5% level (compared with χ^2) for $i = 2, 3, 4$. This implied that there were no differences between years of issue and that the data could be treated as if it came from one population distribution. That distribution was postulated as normal and the data tested for normality by a chi-square test. The hypothesis was not discredited and therefore it was felt that a one way analysis of variance could be applied to the data. However, it was noticed that the *within sample* variability was large and possibly different between issue years. Therefore Bartlett's⁴ test for equality of variance was carried out (without showing significantly different variances) before applying analysis of variance. A summary of all of these results is shown in Table 3.

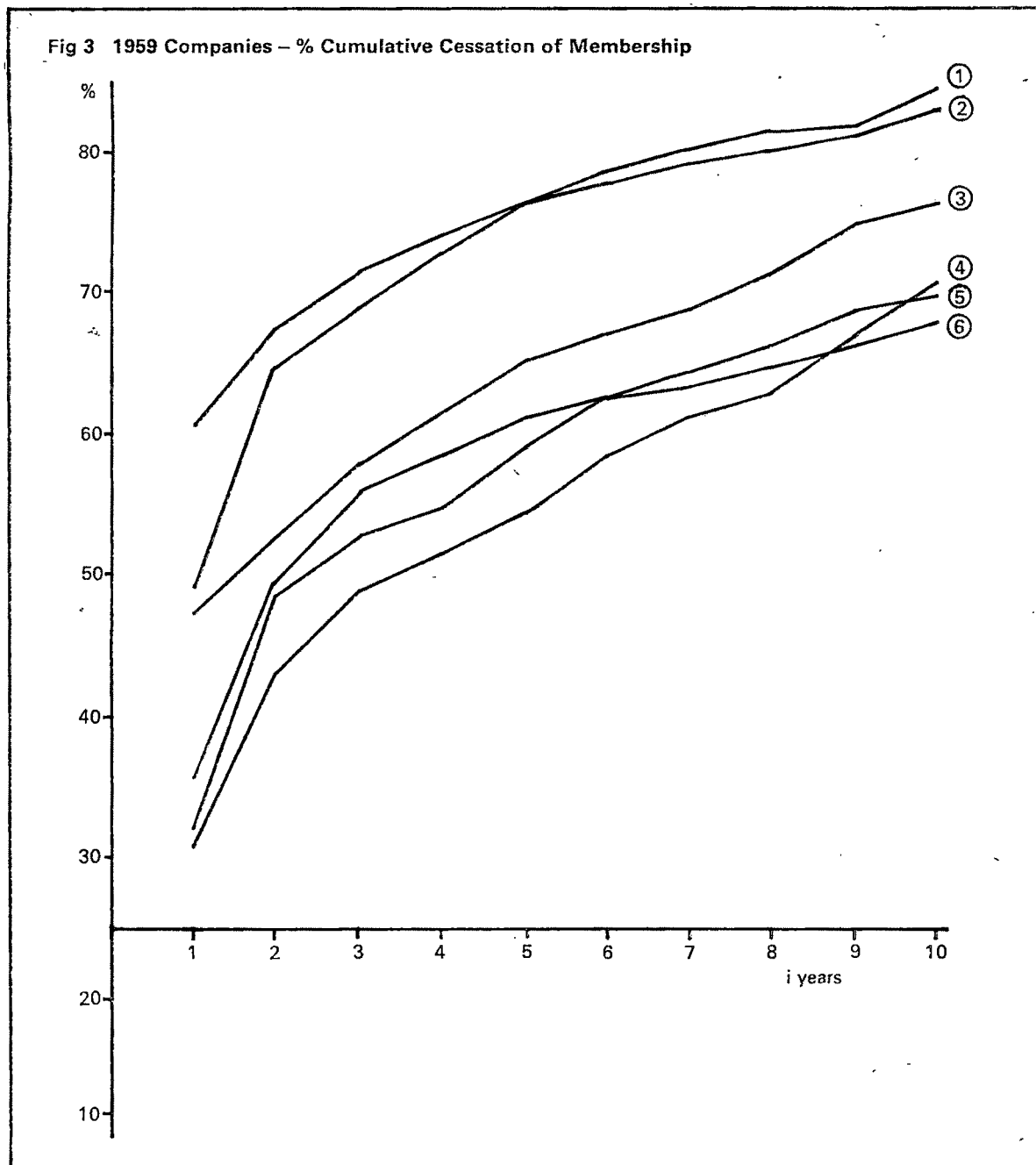
For $i = 2, \dots, 6$, the analysis of variance showed no significant differences between issue years. Cessation within the first year did show differences between issue years at the 1% level of significance. Application of Scheffé's⁴ method of comparison of

³See C. S. Greensted, A. K. S. Jardine, and J. D. Mcfarlane, *Essentials of Statistics in Marketing* (Heinemann, 1974).

⁴See W. C. Guenther, *Analysis of Variance* (Prentice-Hall, 1964).

TABLE 1
1959 Companies % Cumulative Cessation of Membership

<i>Sold within</i>	<i>1</i> <i>Great Portland</i> <i>Estates Ltd.</i> %	<i>2</i> <i>Town and Comm.</i> <i>Properties Ltd.</i> %	<i>3</i> <i>Firth Cleveland</i> <i>Ltd.</i> %	<i>4</i> <i>Holt Products</i> <i>Ltd.</i> %	<i>5</i> <i>Dimplex Industries</i> <i>Ltd.</i> %	<i>6</i> <i>Bristol Street</i> <i>Group Ltd.</i> %
1st Year	49.6	60.6	46.9	30.4	32.0	35.1
2nd Year	64.4	67.5	52.7	43.0	48.9	49.7
3rd Year	69.3	71.5	57.9	49.0	52.8	55.9
4th Year	72.7	73.9	61.3	51.8	55.0	58.3
5th Year	76.0	76.0	65.2	54.3	59.5	61.0
6th Year	78.6	77.6	66.9	58.8	62.6	62.4
7th Year	80.3	79.7	69.1	61.3	64.4	63.3
8th Year	81.7	80.2	70.9	63.0	66.2	64.8
9th Year	82.0	81.7	74.3	67.1	68.6	66.7
10th Year	84.3	83.2	76.7	70.4	70.2	68.2



means showed that the 1957 companies were significantly different from the 1958 and 1959 companies but no others. This difference could not be explained readily by economic factors and it was decided to repeat the analysis (partially) after removing the 1957 companies. No highly significant differences were found between the remaining issue years. The analyses were not extended beyond $i = 6$, because it was felt that the sample was beginning to be unrepresentative, i.e. for $i = 7$, the sample would contain only the issue years 1957 to 1962. It should be noted that the within sample variance

tended to overshadow the between sample variance, which may have hidden true differences.

In summary, the analyses indicated that there were no significant differences in cessation patterns between issue years for cumulative cessations within i years ($i = 2, \dots, 6$). Thus, external economic factors appear to have no effect on shareholder cessation behaviour. For cessations in the first year there appear to be inexplicable differences between 1957 and 1958/59.

It follows from these conclusions that the data for each i may be combined into one distribution whose

TABLE 2
% Cumulative Cessation within 3 Years

Company No.	57	58	59	60	61	62	63	64	65	66
1	63.6	83.2	69.3	76.2	66.6	71.8	54.8	64.9	56.5	63.6
2	51.5	65.5	71.5	51.1	59.5	58.7	60.1	60.1	49.2	63.3
3	52.5	62.4	57.9	57.2	58.5	59.8	46.7	47.1	46.9	57.0
4	32.8	61.3	49.0	56.1	54.6	42.6	51.4	49.7	48.5	41.6
5	32.3	47.0	52.8	49.2	55.7	37.7	47.8	44.8	35.0	39.8
6	36.5	45.5	55.9	46.1	45.7	40.0	37.5	41.8	33.5	20.8
7	17.1	44.6		36.0		33.6			32.8	
Ni	7	7	6	7	6	7	6	6	7	6
Ti	286.3	409.5	356.4	371.9	340.6	344.2	298.3	308.4	302.4	286.1
$\bar{X}_i$	40.9	58.5	59.4	53.1	56.8	49.2	49.7	51.4	43.2	47.7

means and standard deviations are shown in Table 3. (The figures for $i = 1$ are not so meaningful as the remainder due to the 1957 problem.) A graph of the mean percentage cumulative cessation and the one sigma limits is shown in Figure 4. These figures may indicate that approximately 40% of shareholders are relatively short-term investors, while the rest are relatively inactive or inert. It should be recognised that there is wide variability about these figures.

At this stage it was thought that similar analyses on the percentage sold in the i th year, calculated as a percentage of those remaining at the start of the i th year, could be useful. In particular the mean cumulative cessations, X_i , depend upon sales in previous years and thus cannot be treated as independent, which casts some doubt on the validity of interpretations from Figure 4. Figures calculated from percentage cessations in each year, expressed as a percentage of those remaining, may be treated as being independent. A sample of data restated in this form is shown in Table 4 and the analyses in Table 5. The significant results for $i = 4$ and 5 are almost entirely accounted for by figures for J. Coral Ltd. (a 1964 company) and the means and standard deviations have been calculated excluding that company. The results of Table 5 appear to reinforce those of Table 3, i.e. a large volume of cessations in the first two years and relative inactivity thereafter. Once again, within sample variance is large.

2 Interpretation of the analysis

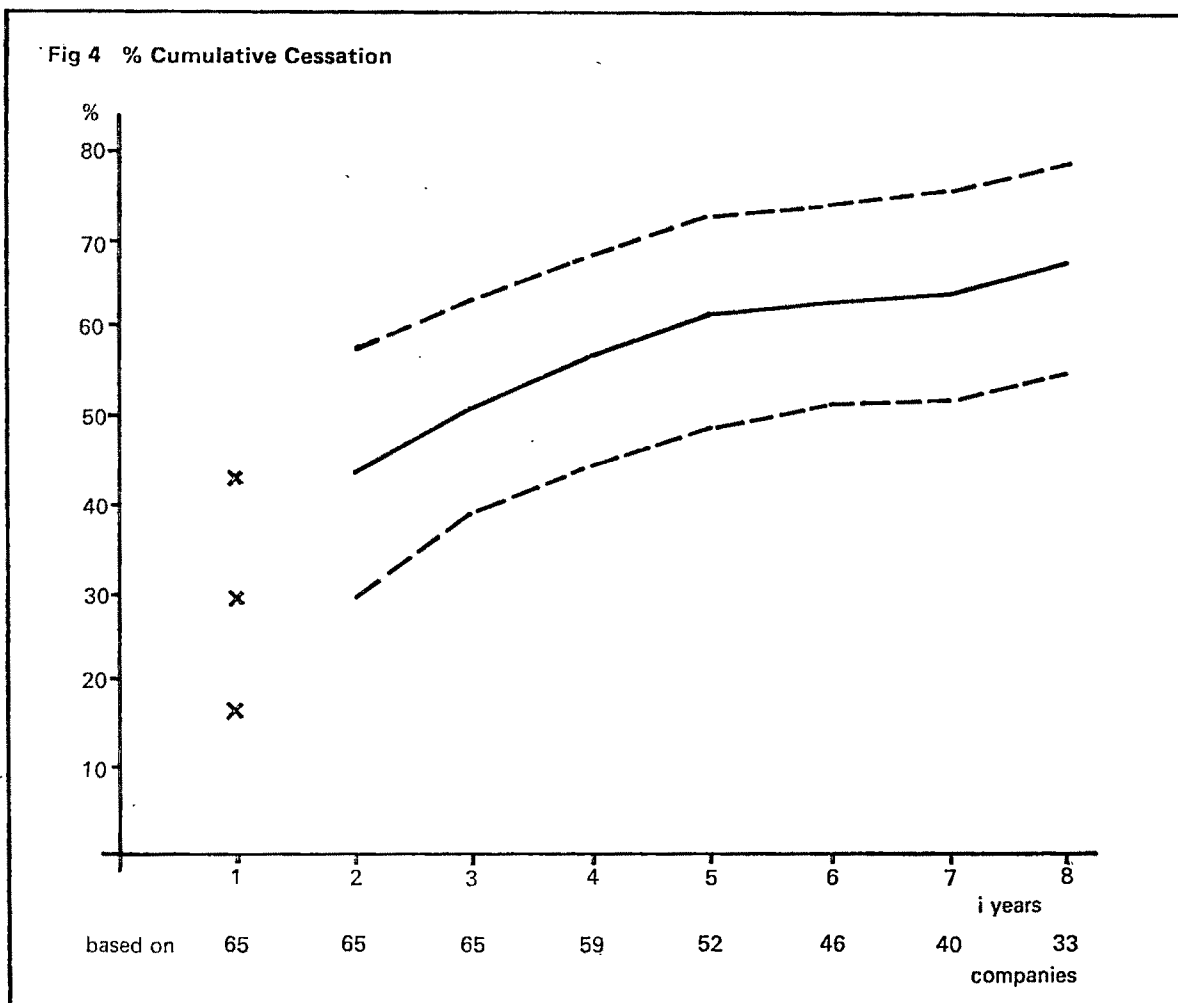
The results of the statistical analysis support the tentative conclusions set out in the two earlier papers regarding the classification of investors into three groups – namely stags, medium-term investors and long-term investors. Because of their speed of turnover neither stags nor short-term speculators in shares of existing companies will often be registered as members of the companies in which they invest and it is virtually impossible for research to be undertaken into their activities except under the auspices of the Stock Exchange. The preponderance of sales in the first three or four years, evidenced in Table 5, does, however, suggest the existence of a medium-term investor and it further suggests that once a shareholder has been with a company for more than four years he is less likely to sell his shares than is a more recent purchaser.

It must be stressed that this conclusion is still only tentative for various reasons. In the first place the graph in Figure 4, although supporting the hypothesis of a steadily declining rate of proportionate cessation, is based upon fewer and fewer companies for the later years. In order to draw more positive conclusions it will be necessary to extend the data

TABLE 3
Analyses of % Cumulation Cessative within i Years

Differences between years of issue

i years	1	2	3	4	5	6
No. of issue years	10	10	10	9	8	7
No. of companies (sample size)	65	65	65	59	52	46
Kruskal & Wallis statistic	32.35	14.95	12.25	12.34	—	—
Tabulated χ^2 @ 5%	16.92	16.92	16.92	15.51	—	—
χ^2 @ 1%	21.67	21.67	21.67	20.09	—	—
χ^2 test for Normality	—	0.43	1.24	0.56	—	—
Bartlett's statistic	14.9	14.1	8.3	5.6	—	—
1 way anova - F statistic	4.19	2.36	1.73	1.90	1.84	1.64
Tabulated F @ 5%	2.06	2.06	2.06	2.14	2.22	2.34
F @ 1%	2.76	2.76	2.76	2.90	3.08	3.29
Scheffé's S method @ 5%	Yes, 57	No	No	No	No	No
Significant differences	Yes, 57	No	No	No	No	No
Mean % cumulative cessation	(29.5)	43.4	50.8	56.6	60.8	62.4
Standard deviation	(13.1)	13.9	12.6	12.2	12.5	11.7
<i>Omitting 1957 companies</i>						
No. of issue years	9		9			
No. of companies	58		58			
1 way anova - F statistic	2.79		2.04			
Tabulated F @ 5%	2.14		2.14			
F @ 1%	2.90		2.90			
Scheffé's method @ 5%	No		No			
Significant differences	No		No			



collected for the 1962-1966 companies in order to trace movements of shareholdings after 1970. In this way information will be available for all 70 companies for a run of at least eight years and the pattern of cessation can then be confirmed.

Furthermore, the pattern which has been suggested shows a considerable deviation from the mean. It is intended, once the additional data has been collected, to attempt to identify explanatory variables such as dividends, earnings, share price, industry, FT index, etc. which might account for those companies which have an abnormal pattern of cessation. As a preliminary test the impact of initial company size, as measured both by value and by number of shareholders, was examined to ascertain whether particular types of shareholder were influenced by the size of a company. The correlation coefficients between percentage cumulative cessation within one and three years and company size were calculated and tested for significance. No significant correlations were

observed, implying that shareholder behaviour is independent of company size.

Conclusions and Programmes for Further Research

The main conclusion at this stage of the project is that there is statistical support for the hypothesis that shareholders may be classified into the three main categories already referred to. Further statistical testing, however, must be delayed until the additional data required for the 1962-1966 companies have been collected. Once this is available the completed project will provide the following information:

- (i) Trends of shareholding behaviour for a period of at least eight years from the date of acquisition for a total of more than 75,000 shareholders acquiring during the period 1957-66.
- (ii) Tests of significance applied to variables which might explain abnormal patterns of cessation.

TABLE 4
% Cessation in the 3rd Year as a % of those remaining

Company No.	57	58	59	60	61	62	63	64	65	66
1	17.5	16.4	13.8	17.6	29.1	8.4	10.7	24.8	14.0	15.3
2	10.8	10.9	12.3	10.8	18.5	17.4	16.7	8.7	13.0	21.9
3	8.3	13.8	11.0	13.5	18.3	10.9	12.2	12.7	15.3	20.2
4	19.2	8.5	10.5	20.5	16.4	11.3	8.3	13.9	18.9	19.7
5	11.8	14.2	7.6	19.6	15.9	7.7	0.2	15.2	13.7	17.1
6	21.8	10.7	12.3	6.3	8.6	8.3	4.1	7.9	12.4	8.0
7	6.2	10.8		6.3		6.7		17.4		
Mean	13.66	12.19	11.25	13.51	17.8	10.1	8.7	13.87	14.96	17.03
Standard deviation	5.88	2.70	2.13	5.97	6.61	3.62	5.90	6.08	2.40	5.01

TABLE 5
Analyses of % Cessation in the *i*th year as a % of those remaining

<i>i</i> years	1	2	3	4	5	6
Bartlett's statistic	14.9	7.76	14.39	64.68	61.00	12.52
1 way anova F statistic	4.19	0.58	2.16	2.24	3.49	1.28
Mean % cessation	(29.5)	20.0	13.1	10.3	7.9	6.5
Standard deviation	(13.1)	8.7	5.1	6.8	3.7	4.0

(iii) Trends in the dispersion of shares at the date of first registration.

(iv) The extent to which existing shareholders voluntarily acquire further shares in the companies in which they have invested.

(v) The extent of relative loyalty of shareholders who buy further shares.

(vi) The extent to which particular types of issue, particularly issues by tender, attract more stable shareholders.

(vii) The extent of involvement of institutional investors in newly-quoted companies. This aspect has already been tested and the results will appear in a monograph on the behaviour of institutional investors to be published during 1976 by the Institute of Chartered Accountants in England and Wales. On the basis of the existing data no significant relationships have been found between percentage institutional holdings and either company size or the number of years since the date of issue.

In addition to the above information research is progressing into the determinants of shareholder behaviour based upon questionnaire techniques. This programme is designed to ascertain the motives underlying the decision to buy or sell shares and in particular to discover whether the holding policy is determined on an 'ex ante' basis or whether it merely results, as Gonedes⁵ has suggested, from the absence of a stimulus sufficiently great to induce a sale.

It is felt that research in this area of shareholder

behaviour is especially important in order to balance and to complement the massive research activity in the field of share price movements. This latter research has led to hypotheses being inferred regarding shareholder behaviour and motivation which are as yet quite untested and there is a major research gap in the area of the determinants of shareholder actions. Only when such research is available will a full understanding be obtained of the process of the determination of share prices. This subject is also of considerable importance for listed companies, for whom, in the theory of finance at least, the market value of their shares is of critical importance for a number of reasons including prestige, growth, survival, etc. In its share register a company has crucial information regarding the determinants of its share price, yet only a mere handful of companies, with Fisons Ltd. at their head, have made any use of this information.

It is hoped that the completion of this study relating to private shareholders and of the further study of institutional investors referred to above will demonstrate both the theoretical and the practical importance of a deeper understanding of the actual behaviour of shareholders of all categories and of the determinants of that behaviour.

⁵Nicholas J. Gonedes, 'Accounting for Common Stockholders: An Eclectic Decision-making and Motivational Foundation', University of Texas, 1971.

The Scope for Accountancy Planning in Developing Countries

Adolf J. H. Enthoven

Some form of economic planning with which to effectively allocate scarce human, financial and material resources is desirable to enhance the economic growth and development of the less developed countries (LDCs). Such planning should cover macroeconomic aspects and the appraisals necessary in the micro sphere, thus covering the project cycle. This planning process, of a preparatory evaluation and decision-making nature, warrants alternative measurements and evaluations for the priority determination of resources; it is future oriented and generally based on a series of goals and means. Within this planning activity sound data and measurements are necessary, including accounting tools and techniques such as: project return measurement; financial balance sheet and income statement preparation; source and application of funds statements; cost studies; systems of control, etc. Accounting information and procedures also play a major role in planning tools such as capital coefficients, input-output analysis and shadow prices.

While economic planning in the macro and micro sectors of the economy is generally subject to a fair amount of formalisation and systematisation, such a structured approach is unfortunately rarely found in the functional service field of accounting.¹

To enable the planning process to function effectively and efficiently, accounting activities may need extensive formalisation and systematisation in the form of accountancy plans and planning. This would involve institutional and professional, legislative and regulatory, and educational and training aspects, pertaining to the closely linked sub-systems or branches of accounting, i.e. enterprise, government and national accounting. Before such accountancy planning can be put into effect, a careful

inventory must be made of existing patterns and requirements. Few countries have any clear picture of their accountancy needs or of the functions which accountancy is supposed to perform in facilitating economic analysis, policy and planning. An inventory of requirements may therefore constitute the first step towards creating a proper planning framework. Some of these aspects will be examined below in greater detail.

An inventory of requirements

A comprehensive inventory of accountancy needs, seldom found in the LDCs, should cover existing systems and methods and available manpower, in addition to present and future requirements. The types and numbers of available accountants should be assessed and the numbers necessary at various functional levels. A few countries, such as Tanzania and Zambia, already have manpower requirement programmes for accountants, and some have crash training programmes. Tanzania also has a government-supervised Board of Accountants and Auditors which plans and promotes study and training in accounting, and sets accounting standards and rules. However, the following aspects should also be covered:

- the status of accounting: its institutional, educational, legal and research aspects, within the context of the country's socio-economic structure, policies and needs;
- medium-term accountancy requirements, linked with five-year economic plans;
- long-range needs, covering the next 5 to 15 years, based on perspective plans.

Educational planning

Based upon such a carefully prepared inventory, accountancy education and training may prove to need thorough reassessment. In Tanzania the Minister

¹We may define accounting as a system of identifying, selecting, analysing, measuring, predicting, processing, evaluating and facilitating decisions regarding economic activities and resources.

of Finance has set up a Task Force in accounting, whose purpose it is to

- (1) assist the National Board of Accountants and Auditors to implement the National Training Programme for Accountants and Auditors;
- (2) evaluate and coordinate the efforts of all training institutions in accountancy and allied fields and to determine
 - (a) the levels of training undertaken at each institution
 - (b) the types and kinds of courses offered by each institution
 - (c) the intake levels to be recommended in order to produce the required annual output;
- (3) assess the operations of the various institutions engaged in accountancy and management training and to help obtain necessary financial, staff and other resources;
- (4) determine the nature of new institutions necessary to achieve the planned manpower supply, and to consider the steps needed for their creation.

In many countries, academic training, which is increasingly required for top-level accountants, tends to be oriented towards financial enterprise accounting and auditing and neglects the vital areas of management accounting, cost-benefit measurement, capital budgets, project studies, and their relation to economic analysis, policy and planning. Furthermore, teaching and texts often rely heavily upon material that is obsolete and locally irrelevant. Useful foreign texts may be unobtainable or untranslatable, and good local texts non-existent. This particular area of educational material needs thorough evaluation and possible correction; alternative text sources should be investigated by the training institutions in the light of economic demands, relevance and costs.

Another area of concern is that of the training courses and teachers. Courses often tend to be highly theoretical and inadequately geared to real managerial and economic circumstances, lacking serviceable micro and macro approaches. Those university teachers who are foreign-educated may be eager to teach what they have learned abroad, which is rarely relevant locally. Moreover, they frequently find more rewarding jobs in industry, as teaching salaries and status tend to be low. Expatriate firms and industries could be a good source of expert teachers, but are often reluctant or unable to become involved in the educational field, or to supply relevant material for teaching purposes. College education could benefit by being more case-method oriented. Moreover, it should be considered whether college training should be a requisite for taking professional examinations, and whether professional and technical training

institutes should grant their own certificates. The planning of course programmes, lectures and certifications might be of vital importance for improving accountancy systems and procedures.

An educational planning model should be closely linked to the potential for more effective coordination between universities, with other disciplines, and with regional and international development organisations. Institutional training also may need appraisal. This generally covers financial enterprise accounting and/or auditing, and management or cost accounting. However, the approach may be over-legalistic and taxation-oriented, especially in the training of financial accountants. On-the-job training and articleship in enterprise accounting is useful but tends to produce 'nuts and bolts' technicians rather than efficient planning and control oriented accountants who are flexible and creative. Such training will also have to be assessed in the light of alternatives.

Government accountants are often trained in government-operated financial-administrative institutes which give little attention to sound and meaningful accounting procedures such as performance budgeting. Emphasis is often given to prevailing practices and methods, and educational planning in this sector is equally necessary.

Book-keepers and clerks who constitute the lower and middle accountancy levels may be trained at accounting colleges or through correspondence courses, which often fall directly under the Ministry of Education. However, such courses usually impede the institution of effective systems and procedures, and it is questionable whether correspondence and 'sandwich' training courses can suitably alleviate manpower problems. On the other hand, Pakistan and India have proven correspondence material which is easily adaptable. A training course should preferably be instituted for mid-level accountants, the diploma serving as a basic professional level and title, to be upgraded by experience and/or further qualification. Diploma holders should have several years of practical experience before being admitted to an official Association of Accountants. Those entering public or chartered accounting may well have to take a specific test in law, taxation and auditing at the end of that period. In Zambia, for instance, the Ministry of Education and Culture has set up a Commission for Technical Education and Vocational Training, which since 1972 has developed a training programme leading to a Diploma in Accountancy. This substitutes for foreign accounting programmes, and is intended to indigenise the accounting profession. It plans to cover financial, cost-management and government accounting, but adequate tests and teachers are a problem and it is still too early to say

how successful the programme will be.

To sum up: the 'climate' surrounding accountancy should first be appraised and checked for possible improvements if people are to be encouraged to undergo training. Domestic salary scales often need to be upgraded in order to discourage academic accountants from going to industry or abroad. Training programmes should focus more on management and decision information systems, capital budgeting, and other planning and control aspects in order that future accountants may be useful in both micro and macro economic sectors.

Teaching texts in many instances could be improved. More texts and professional journals, for example, should be translated and adapted, the choice being carefully made by a review committee as part of an effective country-wide programme. Closely linked to the educational area is the institutional set-up.

Institutional planning

Effective accountancy needs a good institutional set-up but many developing countries are still burdened with weak and outdated frameworks in this respect. In some countries professional accounting bodies may go their own way, have their own entrance requirements (often copied verbatim from institutes abroad) and may be inadequately involved with governmental, economic and social programmes. Strong domestic Associations or Institutes of Accountants (preferably belonging to a Regional Association) with their own framework, standards and requirements, could help to solve some of the accounting problems faced by the LDCs, and would provide status, strength and unification. There may be various degrees of membership, with an overall Association functioning as the parent body for various accounting interests and involvements. A strong institute, and the standardisation and co-ordination of professional certificates and examinations could help improve the climate surrounding accountancy. Such an institute would be able to bring pressure for improvements to domestic salary scales and would reduce the loss of good accountants to other countries or to industry.

The Indian and Pakistan Institutes of Management (Cost) Accountants and Institutes of Chartered Accountants, for example, have recently incorporated economic decision-making and analysis in their courses. This is the first of a wide range of improvements which are to be part of institutional planning.

An institutional set-up should also concern itself with auditing and research. Auditing may at present give inadequate attention to efficiency and operations

audits, economic and social audits. The Indian government, for example, prescribes that cost or efficiency audits, which can only be performed by specialised cost or management accountants, should be carried out for various industries. Furthermore, institutional research into capital formation, normalised reporting and fiscal policy matters may need to be improved. An effective institutional programme can delineate areas of future improvement and planning.

Legislative planning

In many countries, accounting theory and practice is regulated by strict legal and statutory requirements. Others lack such standards and could benefit from legislative planning. Where necessary, special legislation may be introduced on the functioning of money and capital markets such as a stock exchange, and include a sound set of accounting and auditing norms. A Companies Act, for example, could outline the economic significance, scope and content of the financial statements to be prepared and submitted, and the classification, valuation and other measurement procedures which are to be applied.

Effective coordination of legislation, accountancy norms, criteria measurements and reporting standards, the need for which is not always fully recognised, could enhance capital flows between countries. Legal and financial economic standards may be exchanged and coordinated at government level, with the aid of a regional accounting centre and secretariat. The Accountant and Auditor-General's Office should assist in enforcing better domestic accounting standards.

Some countries have passed Accountants Registration Acts, or Accountancy Acts which regulate qualifications, standards of performance, rules of conduct, the administration of examinations and the registration of accountants. More countries may opt for such a pattern. Accounting titles may also be gradually protected by law. Furthermore, the operations of foreign firms, usually belonging to foreign accounting institutes, are being subjected to greater regulation, which clearly defines their rights and obligations.

Separate legislation may be necessary to give the Auditor-General greater leeway in specifying the types of audit and contents to be submitted by outside auditors involved in public sector enterprises and corporations. The function of the Accountant-General's Department should be defined and a Central Accounts Office established which will be responsible for the design and implementation of accounting procedures for government operations. The task of the Central Accounts Office could be

extended to the improvement of departmental and local government accounts, the design of effective internal control and check procedures, and the drawing up of Government Accounting Procedural and Training Manuals. It should also work in close liaison with the state's planning and budget division and the Central Bank. However, not only the countries but the region in which they are situated should take an effective role in this design for the future.

Regional planning

Improvements to enterprise, government and national accountancy may need to be assessed on a regional basis, whereby all aspects should be effectively coordinated and integrated. Regionalism in accountancy often faces ecopolitical and psychological obstacles, and deserves greater impetus than it has found so far. In the Asian and Pacific, East African, and Latin American regions, for example, encouraging steps are being taken towards closer accountancy identification. Within individual countries, the educational and administrative structure is seldom conducive to the adoption and execution of new programmes, and effective exchange with foreign programmes, teachers and new ideas may be deficient. This may well be overcome on a regional basis: college and institutional programmes, for example, should be coordinated and examinations and certificates should be mutually recognised. Training manuals and programmes can be jointly designed, and research and human and material resources efficiently pooled. Regional training could also be extended to accountants concerned with financial measurement and management techniques for specialised and higher-level needs such as performance budgeting, national income accounting, accounting needs for economic analyses, policies and planning, or management sciences.

Whether or not a joint secretariat and training centre could function as the nucleus for regional activities should also be investigated. In addition to organising and coordinating training programmes and certificates, and harmonising accountancy concepts and standards, such a secretariat could give specific courses for specialists as the need arises. There appears to be a need in the Asia and Africa region, for instance, for a highly qualified group of accountants who are trained in:

- information measurement techniques at the enterprise level, for accountancy systems in state and private enterprises, whereby the application of uniform accounting will be significant;
- accountancy aspects of the design of performance budgets, tax administration, accounting, and

other public finance requirements at government levels;

- accountancy measurement systems and procedures in connection with macro accounts;
- the accountancy measurement tasks of economic analysis, policy and planning, such as the effective use of accounting techniques for economic programming, including model building, data for economic projects, cost-benefit analysis, and systems analysis. This should cover measurement areas in both micro and macro economic evaluation planning.

Such economic-oriented accountants could be efficiently trained at the regional level, possibly in conjunction with international or regional organisations.

A regional secretariat could organise research, publications and personnel supply, function as a clearing house, and arrange regional seminars, workshops and conferences. These activities should preferably be coordinated with those of other regional and international organisations. Such a secretariat might also be instrumental in obtaining funds and technical assistance. A regional committee to handle the adaptation and translation of texts could also examine the feasibility of sending key personnel abroad to learn modern methods and procedures in computer technology, management sciences and performance budgeting. A regional secretariat may also play an effective role in handling manpower aspects as part of a regional accounting plan. A joint research and evaluation body for matters of regional interest need not be solely concerned with financial accounting, but may also attend to accountancy requirements for various economic functions.

A regional secretariat and training centre could initially be financed by the respective countries' institutes together with international and/or regional organisations and foundations. It may also be involved in the publication of a professional journal, and of regular pronouncements and research bulletins. To operate efficiently, it should have a small staff of permanent personnel, while experts in specialised fields could be hired for certain periods or on special assignments. Regional and international organisations and foundations tend to be favourably disposed toward effective regional programmes, and may be more willing to offer them technical assistance than they might to uncoordinated projects.

Whether regional accounting plans are to be formulated as part of the regional accounting set-up, and with the full cooperation of the countries concerned, should also be examined: for example, an inventory of skills and requirements; the educational, training, and institutional set-up and desired changes;

necessary amendments to legislative aspects; standardisation of norms; and the financial and technical support required to improve accountancy. Regional accountancy appraisal workshops on evaluation and training could be held in conjunction with regional and international agencies. Local accountants could then work with foreign experts within a well-coordinated programme of training and project experience, and would eventually be able to take over quickly and efficiently. As a result of these accountancy planning evaluations, technical assistance in accountancy may need to be specified.

The role of technical assistance

Various forms of technical assistance may be required if accountancy improvements and plans are to be implemented on a country and regional level. In the first instance, associations in the various branches of accounting, and educational and training institutions in both developed and developing countries should become actively involved. This may well become the function of an International Accounting Development Association, or any other vehicle of international technical assistance.

Regional and international organisations such as

the World Bank and the IMF could play a direct or indirect role in improving accountancy systems in the private and public sectors. They might, for example, attach an accountant to their economic appraisal missions.

A first step, however, seems to be to draw up an 'inventory of requirements' in countries and regions. An accountancy evaluation report should be drawn up in close liaison with local (and possibly regional and foreign) accounting bodies, to form the basis for accountancy programmes and assistance forms, including better regional and international exchange and coordination.

Furthermore, it should be considered whether regional accountancy appraisal workshops should be held in conjunction with accounting bodies from developed countries and regional and international agencies, to determine and outline ways and means for carrying out accountancy development plans by country and region, thus effectively stimulating all accountancy activities.

In conclusion, it may be beneficial for many countries to systematically examine the ways and means by which accountancy – as an effective economic device – could be more implemental in stimulating growth and development.

Conceptual Framework for Improved Computer Audits

C. Nottingham

The professional auditing role is presently undergoing major changes in order to adapt to present business requirements: in particular, education and standardisation in the procedure and treatment of business items. Even so generally accepted auditing standards are possibly too limiting in scope to apply to the full range of auditing activities that accountants may be asked to provide in the near future.¹

It is suggested, for this reason, that a new look be taken at computers and the audit function. Computers have provided the greatest impact on accountants generally, but the theme has always been to expect computer systems to adapt to auditing standards and requirements. (Audit packages merely ensure that computerised data conform with expected audit standards and requirements.) In the evolution of computers and their usage, perhaps we should be looking more towards a change in auditing procedures to accommodate this, and indeed to improve upon present methods.

The responsibility towards change largely rests with such bodies as the AICPA Commission in the U.S.A. and the Consultative Committee of Accountancy Bodies of the U.K. (CCAB). It is intended to consider reasons why change is necessary under present circumstances and to provide a conceptual framework for implementing the change.

In considering the need for change two main areas should be considered. These are:

- (a) The continuing development of computer ware, together with the new era of related computer abuse, criminal and otherwise.
- (b) The present and continuing scrutiny that the auditing profession is being subjected to, both internal and external.

Considering first computer development, it does not need much imagination to see the growing dominance that computer installations will hold in organisational activities, both in economic and social

terms. This in turn should have a direct impact on the audit requirement. At the present time, by the admission of computer manufacturers, notably IBM, total computer security is virtually impossible without astronomical cost. It is doubtful, therefore, whether any corporate body using a computer is fully protected.

Vast amounts are being spent on developing security requirements (IBM in 1974 budgeted \$8 million in the research area²). The need for this security is emphasised by the following information regarding computer abuse. This information represents known computer crimes and abuses at the end of 1973, but specifically excludes privacy abuses.³

<i>Type of abuse</i>	<i>Number</i>
Vandalism	43
Information or property theft	41
Financial fraud or theft	43
Unauthorised use or sale of service	21
Total	148

Studies in criminology generally agree that about 15% of 'known' cases of all types of crime are reported to law enforcement agencies. If this is the case with computer crimes, and we take the additional 'unknowns' together with the area of privacy, it would not be difficult to arrive at figures of between 5% and 10% for all computer installations.

The enlargement of the specific area of fraud, which is traditionally associated with the auditor in the rôle of deterrent, shows the following information. (This inclusion is intended to show the more intimate details of a specific abuse, rather than any implied responsibility of the auditor.)

²R. R. Waller, 'Review of IBM Security Seminar (Amsterdam)', Finance Industry Centre IBM (UK) Ltd. (unpublished).

³Donn. B. Parker, 'Threats to Computer Systems', Risos Project, Livermore Laboratory, Livermore, California (unpublished).

¹E. L. Hicks, 'Standards for the Attest Function', *Journal of Accountancy*, August 1974.

	Number	%	Code
Type of Victim:			
Manufacturing companies	9	35	VA
Banks	8	31	VB
Stockbrokers	3	11.5	VC
Government departments	3	11.5	VD
Anonymous	2	7	VE
Insurance companies	1	4	VF
	26	100	
Type of Perpetrator:			
EDP employee	15	58	PA
Non-EDP employee	8	31	PB
Anonymous	2	7	PC
Non-employee	1	4	PD
	26	100	
Type of Fraud:			
Improper input	8	31	FA
System penetration	12	46	FB
Program manipulation	6	23	FC
	26	100	

(1) Definitions

Improper input is the input of fraudulent information which may arise before or at the time of preparation of the computer input media.

System penetration is the fraudulent manipulation of information following its entry into the computer processing system. Examples would be to erase magnetic tapes, alter standing data etc.

Programming manipulation is the programming of a computer in such a manner as to fraudulently obtain specific favours from incoming data.

(2) Shortcomings of these figures as a representative sample are:

(a) The total number of computer frauds is not

known so the population size of the sample cannot be determined.

(b) In the majority of cases the frauds were discovered by accident. It is probable, therefore, that the more complex frauds are undiscovered.

(c) Frauds by employees are frequently dealt with internally and information is not released.

(3) Further investigation outside the scope of this paper would be necessary, using larger samples, to determine whether the varying organisational structures influence the identity of the perpetrator and type of fraud.

(4) The following matrix enables the relationship between victim, perpetrator and method to be determined and probabilities calculated.

Case	VA	VB	VC	VD	VE	VF	PA	PB	PC	PD	FA	FB	FC
1	X							X				X	
2	X									X		X	
3	X						X					X	
4	X							X			X		
5	X						X				X		
6	X						X					X	
7	X						X					X	
8	X						X						X
9	X						X				X		
10		X						X				X	
11		X						X				X	
12		X					X						X
13		X					X						X
14		X					X						X
15		X					X						X
16		X						X				X	
17		X						X				X	
18			X				X					X	
19			X					X			X		
20			X					X			X		
21				X			X				X		
22				X					X		X		
23				X					X		X		
24					X		X						X
25					X		X					X	
26						X	X					X	
	9	8	3	3	2	1	15	8	2	1	8	12	6

Matrix relating victim, perpetrator and type of fraud

In summary, the main areas of computer vulnerabilities lie in the ability to:

- (a) provide improper input
- (b) penetrate the system
- (c) manipulate programs.

One other aspect, previously mentioned, is that of privacy. This area could also have far-reaching effects.

The conclusion from this, which is in line with security research being undertaken by computer manufacturers, is the necessity to provide 'protection elements' rather than deterrents. It is anticipated that the coming generations of computer ware will enable total protection of the system to be introduced.

Considering next the audit requirements (in this context the reference is to external audits, although

in the majority of cases the following will apply equally to the internal auditor), the pertinent questions that may be asked are:

- (a) What responsibility should the auditor assume for computer crimes and abuses, if any?
- (b) How will future protection elements affect the audit procedure, if at all?

Before suggesting possible answers, it is perhaps useful to be aware of the shortcomings of present computer audits. These may be listed as follows:

- (a) Emphasis has been placed on high level expertise in designing sophisticated audit packages, at the expense of more simple areas of basic control. In any case audit packages are used in insecure systems.
- (b) No recognition is provided for new areas of possible computer abuse.
- (c) Computer audit packages do not recognise any element of protection needs.
- (d) Computer audit packages use sampling techniques that are not based on determined levels of risk.
- (e) Recognition is not given to the fact that EDP employees have different objectives and motivations from traditional accounts department employees.
- (f) Operational controls have not received the attention and importance that they deserve.
- (g) Present computer audits employ the traditional principles and logic of outdated methods of accounting.

From this it is possible to provide answers to the questions raised, and in doing so provide a conceptual outline for improving computer audits.

In dealing first of all with the auditor's responsibility, it is of course not possible or realistic to make the auditor responsible for security. He must however report on the accuracy of the financial records, and validity of assets. To do this he relies upon the computer audit package and an investigation of operational controls.

The shortcomings of audit packages have been mentioned. The package itself should have the ability to select, sort, merge, match, accumulate, summarise, sample, calculate, sequence, check, and print. Whilst these capabilities should identify any abuse of a perpetual nature, evidence suggests that these packages are not doing so. Examples of actual computer frauds that were not detected by audit packages are as follows:

- (a) A programmer within a bank designed a system with the additional refinement that it overlooked any overdrafts on his own account.
- (b) A controller embezzled by setting up dummy vendors in accounts payable. The action was

discovered only when a computer analyst converted to a new system.

- (c) An employee changed several deceased insured persons' account numbers to his own in order to collect their pensions. He was apprehended when a fault forced manual handling of the cards.

These crimes are not very sophisticated and *should* have been detected by the audit package. Whilst admittedly the auditor's responsibility is not to detect crime, it nevertheless remains an implied duty. In this respect it would appear that auditors may be reporting upon accuracies, when inaccuracies cannot be determined, for at the present time no known detection of a crime has resulted from using an audit package.

With regard to operational controls which cover personnel responsibility separation, access control, protection of stored data etc., these will be written to comply with the auditor's requirements. However, the actual controls enforced in practice will undoubtedly fall short of the written controls. There are two main reasons for this. Firstly, with the increasing desire for self-determination, employees feel the need to set their own code of practice, which will often bypass stringent security checks. Secondly, written operational controls in effect question an employee's integrity which at the least will cause resentment, and at the most defiance.

It is intended to return to behavioural aspects later. The main point of contention at this stage is that accountants tend to lack an understanding of behavioural theory. The result of this could be, and in certain cases is, conflict. Perhaps this was not too important in dealing with personnel in the traditional accounting areas, but it is important when considering computer personnel. The latter probably see the dominant use of the computer for book-keeping as an infringement of the computer's capabilities, keeping them from more serious work that they are capable of, ie, mathematical functions of planning, etc.

These then are some of the problems. The continuing development of computer systems will remain with us, as presumably will the desire of certain individuals to commit crimes and abuses. The variable would appear to be the ability of the audit rôle to adapt to these trends. As already mentioned, reporting upon accuracy is dependent upon identifying inaccuracies.

Present computer audits are therefore based upon an implied detection basis, the shortcomings being as mentioned. Computer researchers have rejected the idea of detection in making a computer system secure, and placed total emphasis on providing protection elements. Computer manufacturers in turn

are implementing protection elements in designing their wares.

Faced with this, and other foregoing points, it is suggested that *the auditor's duty be discharged by reporting upon the level of risk* (i.e. the risk to which assets are exposed through lack of organisational requirements. There does perhaps exist justification for auditors reporting also upon normal business risks that investments are subject to. This, however, is outside the scope of this paper).

In reporting upon risk, three areas of examination are envisaged. These are:

- (a) Standard protection requirements
- (b) Empirical findings
- (c) Behavioural understanding

Each will be discussed in turn, together with the possible consequences to the auditor.

(a) Standard protection requirements

The TRW System Group working on the evaluation of the Resource Security System is developing security requirements and security certification methods.⁴

(1) *Security Requirements* are those which define the access rules of the particular installation:

- (a) Regulating requirements justified by legal status.
- (b) Access constraints.

(2) *Installation Requirements* are those which directly effect the amount of protection needed, and permit the installation to meet its operational goals.

(3) *Technical Requirements* are those which must be met by either hardware or software of the system in order to provide an acceptable level of security established by the above security and installation requirements.

Whilst the auditor can have little influence over technical requirements other than to be aware of developments for possible future recommendation to clients, the security and installation requirements are of vital importance. It would appear that the present approach recognises possible threats and vulnerabilities and concentrates its efforts there. The need for protection is largely ignored.

The two basic control tools at present used by auditors are:

- (a) Internal control questionnaire for EDP installations.
- (b) Audit program package.

The questionnaire at the best will only answer questions related to vulnerable areas and in any case

will usually provide biased answers from EDP employees. The audit packages merely provide a search for system violation. Neither provide sufficient data and insight to discharge adequately the proposed duty of reporting upon the level of risk.

It is suggested, therefore, that emphasis should be placed on the need for protection, which will negate both threats and vulnerabilities. Whilst this may seem nothing new, it appears that no all embracing identification of protection requirements is used by auditors. The TRW Systems Group have identified over 180 protection elements, which cover not only fraud, but computer privacy, loss of information etc. Whilst these protection elements have been identified for the primary task of designing computer hardware and software, they do provide a broad conceptual framework that can be adapted to an EDP audit. The areas other than fraud, i.e. privacy, loss of information etc., are probably more important in economic terms and should certainly come under surveillance by the auditor during the discharge of his duties.

It is also extremely likely that the next generation of computer ware will include security protection features that will make redundant the present auditing techniques. It is perhaps therefore time to start planning for a new approach. It is not intended to provide in this paper a detailed future audit plan and requirements, but merely broad outlines of the three pertinent areas. What would be preferable would be to see a concentration of effort by the major audit firms to produce a common audit program, rather than the production of several audit packages each fulfilling the same basic functions as at present.

The areas of protection identified by the TRW Systems Group covered five major elements:

(1) *Isolation Element*: an inherent quality of protection that ensures that a sufficient number of barriers between user, data, operating system functions and resources has been formed to maintain the proper separation of users, not only from each other, but from the operating system.

(2) *Controlled Access Element*: users' information must be inaccessible to other users. On the other hand this requirement may need to be breached in order to grant controlled access of that very information to certain users.

(3) *Identification Element*: the means of verifying the identity of a resource, user or process by checking the machine-readable, unique names assigned to each. The principle that guarantees protection is that coding cannot be forged.

(4) *Surveillance Element*: this must ensure the detection and reporting of any unauthorised attempt to penetrate the system. Further it must constantly monitor the functioning of the protective

⁴F. Stepczyk, 'Security Requirements, Vol. III', TRW Systems Group, Redondo Beach, California (unpublished).

mechanism to ensure the auditability of the system.

(5) *Integrity Element*: important because it cannot be guaranteed that any of the other principles are inherent in the system if the mechanisms that implement them are unreliable.

The basis on which protection was applied to each element was:

- (1) Protection of the system from user process
- (2) Protection of the users from each other
- (3) Protection of users from themselves
- (4) Protection of the system from itself
- (5) Protection of the system from the environment.

It is recommended that the report prepared by the TRW Systems Group (published in the *IBM System Journal*, May 1974) be read. This contains broader and more elaborate definitions of the protection elements, together with the security requirements which are basic model rules in securing a system.

What is recommended, therefore, is that in identifying security risks and vulnerabilities the most practical approach is to identify the protection requirements and to build a common conceptual framework around these. This will be influenced by the computer ware available and in use by client companies. It is possible that the protection requirements will fall away with the development of security featured computer ware, or more likely be replaced with new requirements due to evolution of techniques of abuse aimed at the computer. The principles incorporated by the present computer audit packages have been with us for almost twenty years during which time a technically more capable generation has entered the field, and case studies prove that it is comparatively simple for them to evade present security requirements. A further

indication of the auditor's failure to provide effective security is the growing number of computer security consultants in the U.S.A. It would appear evident, therefore, that new auditing techniques are required to provide the necessary protection or information expected by clients.

It is hoped that by first examining protection requirements, together with other identification areas, a more embracing solution can be found.

(b) Empirical findings

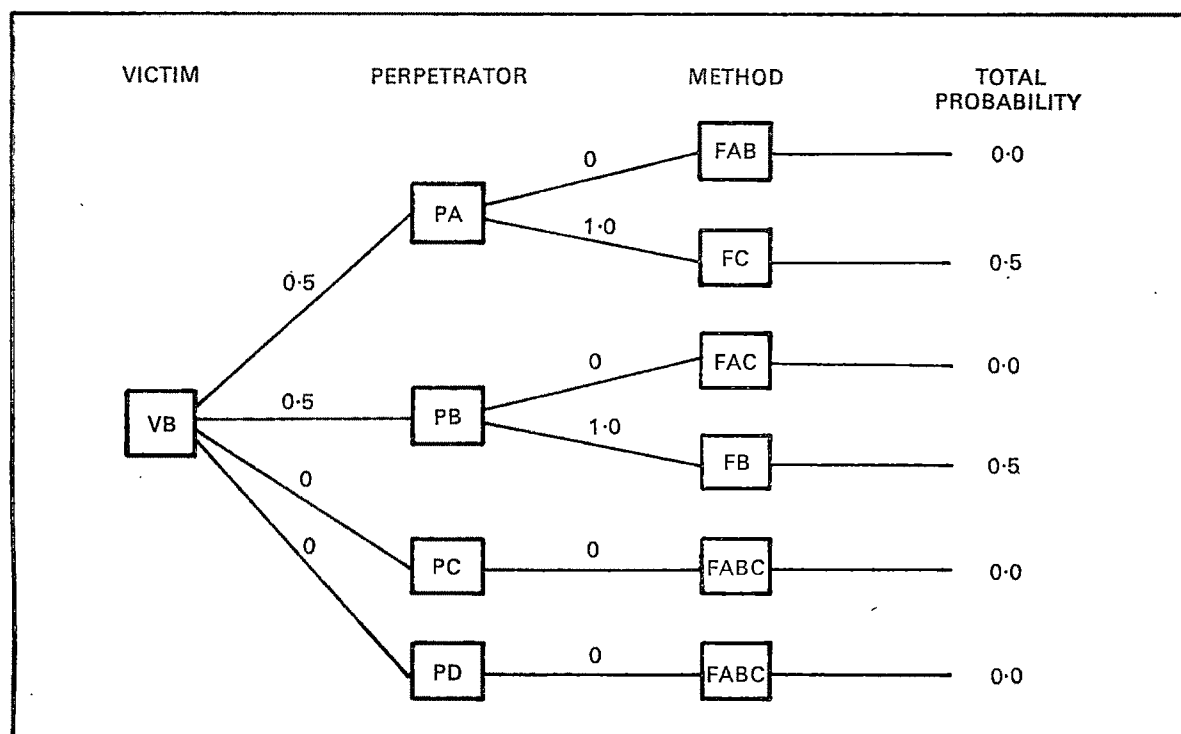
Whilst audit manuals may describe various characteristics pertaining to different industries, auditing techniques do not differ through the industries except with the obvious examples. Similarly, the samples made by audit packages, and other areas of emphasis in a computer audit, seem to be made without any form of precedent or guidelines based on risk of abuse.

It was shown earlier that probabilities of abuse can be calculated by using information from the cases of computer fraud available. This information can obviously be broadened to include abuses other than fraud; and also to provide more information on the type of victim. If such a comprehensive list of cases could be compiled to show:

- (1) Type of victim
- (2) Origin of perpetrator
- (3) Method and type of abuse

then the relevant correlation and probabilities could be calculated and used for computer audits.

To illustrate this in its simplest form, and using information listed earlier regarding computer frauds, it is possible to calculate probabilities as follows. Assuming the audit of a bank is to be undertaken the following would be applicable:



The auditor could deduce from these findings that, in conducting a bank audit, the areas of high risk (against fraud) would be divided equally between an EDP employee committing a fraud via program manipulation, and a non-EDP employee penetrating the system. No other types of risk against fraud are evident.

If these empirical findings could be broadened to cover all areas of abuse and current abuses monitored to update the findings, it should be possible to provide statistical data that will enable a more orderly and scientific computer audit, emphasis being placed in areas of high risk. Obviously a great deal of work is necessary in compiling this information, and identifying the behaviour of the various abuses. The difficulty in doing this should not provide an excuse for the audit profession not to compile information that is available, especially when this information should ultimately result in time and cost savings through the need to investigate thoroughly only specific defined areas where high risk is apparent. Using the above decision tree to calculate probabilities of risk within the computer system of a bank, it is possible to envisage the saving of a great deal of time in unnecessary audit investigations. The branches of the decision tree where no apparent investigation is required far exceed those that require investigation.

More elaborate methods of identifying probable areas of risk other than the decision trees just mentioned are becoming more accepted, and current reading is available on the subject. However, the literature is primarily designed towards the calculation of and allowance for risk in capital budgeting decisions. There would appear no reason why these cannot be adapted into mathematical models applicable to auditing techniques, whereby concentration of resources and effort is made in high risk areas; the opposite being applicable in capital budgeting decisions.

It was mentioned earlier that co-operation between member firms of the auditing profession was desirable in producing a common audit programme. Likewise a pooling of knowledge with regard to computer abuse should also be feasible.

Some form of control data bank would contain the analysis of cases, and also the pertinent areas of risk. It could, however, be necessary to use other sources of information, for current research indicates that a high percentage of all computer abuses are discovered accidentally. Indeed there does not appear to be a case on record where an external auditor has discovered any such abuse.

(c) Behavioural understanding

Reference has been made throughout this paper to

behavioural matters. It is intended therefore to explore this aspect further.

Within every type of organization both formal and informal it will be found that organizational objectives are not achieved merely by the imposition of rules and regulations. Perhaps it is even wrong to speak of organizational objectives, for these will usually reflect the objectives of prominent individuals within the organization. What is certain, however, is that there is no function within an organization that does not touch upon individual behaviour to some extent.

For this reason it is surprising how relatively unimportant the professional accounting bodies regard the subject. Rather than stray from the area of computers into other related areas where an understanding of behavioural matters may be equally important to auditors it is hoped to highlight this deficiency in the area of computer audits.

In any crime or abuse the act must be generated by an individual's needs or problems. Whilst it is not suggested that the auditor must become a psychiatrist and undertake a personnel audit, it would be advisable to understand reasons why the individual's needs or problems arose. The following list highlights the major behavioural aspects of computer criminals. These show the inherent qualities that they tend to possess.⁵

- (1) They tend to be young, which is in keeping with the relatively recent development of computers.
- (2) The fear of detection bears heavily upon them. (It must be remembered that with white collar crime it is the crime that is hidden and not the criminal, whilst with ordinary thefts or crimes it is the criminal's identity that is protected and not the crime.)
- (3) They tend to be highly motivated and amenable to meeting a challenge and beating the system and overcoming protective devices.
- (4) They tend to be in trusted positions when they commit their crime and have not previously been in trouble with the police.
- (5) The cheating of giant corporations is not seen as being morally wrong as opposed to cheating an individual. In fact, they often claim they are just getting even for the great harm organizations do to society.
- (6) They tend to be dissatisfied with the environment in which they exist and its inequalities whether imaginary or real.
- (7) They tend to be technically competent.

The theory that computers are breeding a new type

⁵Donn. B. Parker, 'Threats to Computer Systems', Risos Project, Lawrence Livermore Laboratory, Livermore, California (unpublished).

of criminal has been expounded. This may be the case in certain instances, but it is perhaps necessary to categorize computer crimes. Such crimes would seem to fall readily into:

- (a) Crimes for financial gain;
- (b) Crimes for non-financial gain.

Examples of (a) would be fraud program thefts etc., whilst the chief example of (b) would be vandalism.

It is doubtful that computers are responsible for the behaviour of the criminal in crimes of a financial nature. The computer is merely a tool in the evolution of criminal acts. There may be a case however for computers bearing the responsibility for criminal acts of a non-financial nature.

Perhaps greater emphasis for responsibility of computer crimes, together with other criminal attacks on corporate bodies, lies in the gradual separation of legal and moral codes. The idea of 'fair trading' by corporate bodies has always seemed to be lacking in ethical codes of behaviour. It is, for example, in most cases, perfectly legal to use speculation to sway the equilibrium between price and demand which in moral terms is tantamount to a swindle on society.

It is not difficult to provide justification for criminal acts against companies that undertake this type of act. We can see from the inherent qualities listed that in the fifth characteristic the cheating of giant corporations is not considered morally wrong. The moral deterrent that exists is therefore gradually being broken down and is being replaced by the 'Robin Hood' concept. For this reason it is found that the majority of computer crimes are reactionary against corporate organisations.

From this it would perhaps be correct to say that the auditor, in his responsibility to discharge his duties in informing management of the level of risk under which it operates, should mention the ethical factor. If a company operates outside generally accepted ethical standards, then it may run a greater risk of attacks upon it.

Another important characteristic is that of dissatisfaction which, when linked to level of competence and motivation, can prove dangerous. Competence and motivation are admirable when linked to company policy, and care must be taken to ensure this. If a young ambitious computer technician finds the avenues for his talents blocked, then he will become bored and dissatisfied. This will result in his leaving the company or finding a new outlet for his talents. Should the latter take place, it is almost certain to be illegitimate to company policy and at the worst criminal.

Whilst the auditor can have little influence upon

this, other than offering advice, it may be possible to relax petty constraints that computer personnel may find offensive. As mentioned earlier computer personnel often find the use of the computer in its dominant book-keeping role objectionable. They see this as a constraint upon themselves and the computer in the hierarchy of computer use. The auditor should recognize this fact and do whatever possible to provide a common acceptable solution.

The reason that it is considered desirable to understand the behavioural concepts attached to computer abuse is that it cannot readily be separated from the other computer audit suggestions.

It has been suggested earlier that the audit must concentrate on the need for protection and the identification requirements. This, then, should in turn be linked to identifiable patterns of abuse and risk. In order to do this it is necessary to know the behavioural characteristics that may be inherent in a potential computer criminal, in order to more readily identify protection requirements, patterns, and methods of abuse.

The main deterrent is still the fear of detection. Obviously no potential computer criminal is going to commit a crime if he feels that he is going to be detected. Similarly it is the crime that needs to be protected and not his identity. For this reason protection of the computer is of vital importance; hence the emphasis placed on devising protection requirements in order to secure the computer from abuse. In this respect it is pleasing to know that the major computer manufacturers are concentrating their security research in the area of protection, namely, access control and user identification.

Conclusion

It is not intended that this paper should provide an easy solution to a complex problem. An easy solution does not exist, due to the very nature of computers and their capabilities. It is hoped however that a conceptual framework for further development has been provided.

The importance of providing more useful auditing techniques would appear to lead towards the pooling of resources both by the auditing profession and by the computer manufacturers. The research currently being undertaken by the latter in the security area will result in the implementation of security devices in the near future. It may be necessary to provide legislation to ensure that computer users incorporate security features, for at the present time certain security devices are available but are not generally purchased. Presumably, the cost of such devices is the deterrent to their use.

Finally, with the accounting function and methods diminishing in favour of new and improved process techniques via EDP, not only are new controls required, but two other problems exist. Firstly an educational problem exists in making computer personnel more security-conscious. The other is to re-train accountants to understand more fully the requirements that will be demanded of them by the continuing evolution of the computer, both in physical and behavioural terms.

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Fiftieth Anniversary of The Accounting Review

M. J. Mumford

In March 1926 Volume 1 Number 1 of *The Accounting Review* was published; and in the subsequent fifty years the AR must have published quite 70 per cent of the world's output of academic articles on accountancy in its various forms. The AR thus occupies a unique place in accounting research, study and education. The original publishers, the American Association of University Instructors in Accounting, became the American Accounting Association in 1936, and the 500 membership of that time has grown to over 11,500 today, giving the AR a circulation in excess of 16,500. From the outset, emphasis was placed in AR upon research and all the significant developments in accounting thought since 1926 either have their origins in the journal or have been soon reflected in its pages.

The years 1926 to 1936 were concerned largely with descriptive analysis of accounting practice, often based upon specific industries. Prominent attention was given, not surprisingly, to matters of pedagogic interest – course contents, research proposals, book reviews – reflecting the fact that 85 per cent of its readers were academics. During the early 1930s, Professor Roy Kester launched fierce editorial attacks upon the resistance of the accountancy profession to formulating accounting standards, either based upon valid theoretical premises or even upon the crudest syntheses of practice. Vindication from the 1934 Securities Exchange Act rings out in the famous Editorial of December 1934. The SEC Chief Accountant was authorised to compile the accounting principles that the profession had conspicuously failed to provide.

During the 1940s and 1950s, the AR documents the great debate which arose between 1936 and 1957 on the treatment of general price level changes; the AAA's Statements of 1936, 1941 and 1948 accepted historical cost as the proper basis for financial accounts, while the pivotal Supplementary Statement Number 2 of October 1951 and the subsequent Statement of 1957 accept the value of general price

index adjustments.

During the 1960s, the AR greatly advanced the cause of empirical research, including, for example, seminal work on the predictive value of accounts. The 1966 AAA Statement, 'ASOBAT', was published separately, but much of the case for current value and multiple value statements has been published in AR. Of course, the current value controversy began before 1926, with work by Earl Saliers (on replacement costs), Roy Kester (on realisable values) and W. A. Paton's important 1922 book, *Accounting Theory*. However, with Paton and Littleton, Sanders and Hatfield, Gilman and Husband, Kester and Kohler, Ralph C. Jones and H. W. Sweeney, C. Rufus Rorem and DR Scott, Perry Mason and Robert Montgomery amongst the AAUIA membership at the start of AR, the new journal could hardly fail to catch the new lines of thought as they developed. There were a few failures; MacNeal's *Truth in Accounting* and Gilman's *Accounting Concepts of Profit* were neither of them reviewed in 1939, when they were first published. The idea of 'deprival value' (based upon the work of J. C. Bonbright, and basic to much current work on this side of the Atlantic) seems to have received very little attention, perhaps due to the continuing institutional resistance to current value accounting in the United States.

The AR has pioneered many valuable developments, including the publication of papers from the groundbreaking 1st International Congress on Accounting of 1929; classified lists of research thesis titles from American Universities; and the addition of annual Supplements to include the wide range of reports from AAA Committees. The real strength lies not so much in novelty, however, as in the consistently high quality of the material published. Even with the advent of new journals in several countries, each of high quality and enjoying international circulation, to be published in *The Accounting Review* remains a signal mark of achievement.

Book Reviews

Company Finance in Europe. *J. M. Samuels, R. E. V. Groves and C. S. Goddard.* Institute of Chartered Accountants in England and Wales, 1975. 341 pp. £7.00.

The core of this important text is a series of chapters which outline the financial structure and the sources of finance for industry in seven European countries, namely France, West Germany, Spain, Switzerland, Holland, Belgium and Italy. This section is followed by chapters on multinationals, Euro-markets and cross-frontier investment and competition and the book ends with a short chapter on investment and economic growth and a still shorter concluding section. The text makes an invaluable contribution to our understanding of the processes by which industry is financed in Europe for it provides extensive information which is not available elsewhere in such a convenient form. As such, anyone who is interested, whether as an academic or as a practitioner, in European financial affairs will find that it is essential reading. The only drawback in this respect is that much of the data does not go beyond 1971. This is inevitable in a book of this size given the delays in the publication of official statistics and the lead time required for printing, but the authors are unfortunate in that developments in this field since 1971 have brought about major changes which negate much of the commentary and many of the conclusions. This, however, is a minor factor which is outside the control of the authors and which should be remedied in the later editions which demand will surely require.

A further minor criticism is that the authors do not always state clearly the definitions which have been adopted in the tables of statistics. This is particularly true with regard to the tables of stock exchange activity and accounting ratios.

The major criticism relates to the failure of the authors to include an analysis of the UK capital market. While this may have been outside their terms of reference it has damaged the quality of the text as a comparative study and has also reduced the force of the concluding section. Admittedly references to the UK capital market are scattered throughout the text but there is no integrated study thereof, so

that the authors' conclusions and recommendations for the UK are not fully supported by the necessary statistics. As a result these recommendations, most of which are eminently sensible, are not presented in a very convincing fashion.

In this concluding section the authors draw eight main conclusions:

- (1) The level of investment in the UK in recent years has been much lower than that of competing countries.
- (2) The economic climate created by successive governments in the UK has not encouraged investment.
- (3) Financial intermediaries in the UK have been concerned with short term profits rather than the provision of long term finance.
- (4) More medium and long term loans must be made available to industry.
- (5) The UK capital market has not channelled funds into the most productive investment opportunities.
- (6) Steps could be taken to revive the industrial bond market in the UK.
- (7) The propensity to save in the UK is not as high as in competing countries.
- (8) Too much attention is paid to labour and management problems in the UK.

Attention is then concentrated upon the third of these factors and it is argued first that the cost of capital to industry would be reduced if banks would be prepared to allow an increase in capital gearing by accepting lower interest and asset cover on loans and by taking a longer-term involvement in companies. The second argument is that there is too much emphasis on the secondary market in the UK Stock Exchange with the result that the short term share price is of inordinate importance for most listed companies. This conclusion is surely correct. The higher the share price the more easy it is to grow by absorbing other companies and the smaller the chance of being taken over. Furthermore, the reliance of institutional investors upon investing in shares with little or no real involvement with the company concerned has led to a lack of loyalty and to a willingness to take paper profits when a bid is

made. It could be argued that the importance of the secondary market has intervened between institutional investors and the companies represented in their portfolios so that they do not have the close ties which exist in certain continental markets. The dominance of the secondary market is also probably a major factor in the accounting abuses which accompanied the takeover booms of the 1960s.

However, while there is a strong case for arguing that financial institutions have been overmuch concerned with short term share prices and that the stock market and property market collapse in 1973-74 were due to money being pumped recklessly into those sectors rather than production, industry and government must also shoulder much of the blame. The volatility of government policy towards industry has made planning so totally uncertain that it is surprising that industry has invested at all and there can be no improvement until confidence has enormously improved; while the low level of capital gearing is probably attributable as much to conservatism on the part of industry as to unwillingness to lend on the part of institutions. In fact an examination of company reports will show many examples of chairmen congratulating themselves for avoiding debt and limiting growth to the level of retained profits.

In short, then, this is a most authoritative text, the conclusions of which, though not presented in the most convincing way, provide a revealing commentary on the failings of the capital market, of industry and of government which have led to the stagnation of British industry in recent years.

R. J. Briston

The Chancellor of the Exchequer has called *Company Finance in Europe* 'an impressive study'. Parts of the book merit this description; others do not. Most of the book is taken up with a country-by-country analysis of the capital markets and methods of financing in Europe. The authors have done a valuable job in bringing all this material together in one volume although it is already beginning to look out of date since few of the tables extend beyond 1972. Comparisons with UK practices are made in several parts of the book. These comparisons are almost always unfavourable to the UK. The authors' main argument is that the UK's low rate of economic growth is largely due to the low level of capital expenditure in the UK which, in turn, is to a large extent due to the failure of institutional investors, such as pension funds and insurance companies, to channel sufficient new money into industrial companies. In the last few pages this argument is developed into a wide-ranging attack on City attitudes

couched, in places, in emotive terms. The UK stock market is 'overactive'. The emphasis has been on 'short term returns, mergers and takeovers, and property investment'. Investors have found it 'more profitable to play games, buying and selling . . . than to invest new capital in industry'.

Very little evidence is produced to support these assertions which are best described as half-truths. There is, of course, no denying our low rate of economic growth. This has continued for so long – it was the subject of a series of articles in *The Times* at the turn of the century – that most developed countries have now overtaken us in terms of output per head. Low capital investment is no doubt part of the problem but, as the Chancellor has pointed out, our failure to obtain sufficient productivity from new investment is at least equally important. Indeed, the recent investigation by the Government 'Think Tank' showed that output per man in car assembly plants was only half as high as on the Continent *even when using identical equipment to produce identical models*.

The authors' criticism of the amount of money raised through the UK stock market has to some extent been overtaken by events. During 1975 industrial and commercial companies raised £1,000 million, compared with an average of £250 million p.a. in the previous five years and nothing at all in 1974. Even in 1975 the new money raised was dwarfed by profit retentions of some £8,000 million, so it remains true that industry derives only a small proportion of its funds from the stock market. But this is as much due to shortage of *demand* for funds as shortage of *supply*. The experience of the last twenty years shows that businessmen only increase their capital spending when they are operating their existing plant near to capacity.

As for our 'overactive' stock market, turnover in UK equities amounted to 24 per cent of the average market value during 1975. This was more than the estimated figure of 21 per cent for Germany but less than Holland's 28 per cent. In any case one would have thought that an active stock market would make it easier rather than more difficult for companies to raise new money. Where turnover is particularly high in London is in the gilt-edged market – the figure was around 140 per cent last year, compared with only 18 per cent for company fixed interest securities. With this background the Government had little difficulty in raising some £5,000 million of new money, five times as much as was raised by industry.

Perhaps the most striking feature of the UK capital markets in the last three years has been the virtual absence of fixed interest issues by industrial

borrowers. During the financial crisis of 1974 companies' cash deficits, which amounted to £3,300 million in aggregate, were largely met by bank borrowing. The recovery in new issues during 1975 was largely confined to equities.

UK companies have traditionally made less use of loan capital than their continental competitors. Average gearing (borrowings, less cash, as a percentage of total funds employed) is now 26 per cent, and tending to fall, compared with about 45 per cent in France and Germany. If we are to encourage the raising of new money we should therefore look for ways of increasing the use of loan capital. One obvious line of attack would be to extend the exemptions from transfer duty and capital gains tax (for securities held more than a year) which at present apply only to gilt-edged securities. However, the real deterrent to issuing fixed interest securities in the UK is the high rate of interest which for industrial prior charges is currently about 15 per cent, compared with an average of around 9 per cent on the Continent. Few businessmen are prepared to take the risk of borrowing long term money at 15 per cent, particularly when bank overdrafts cost only 11½ per cent.

Until interest rates fall further, the future of the loan capital market appears to lie with something other than the traditional fixed interest security. The answer may be either convertible loan stocks – these could probably be issued on a 10 per cent yield basis – or variable interest loans. The banks and FFI (the Lever Bank) are offering 5 – 10 year loans with interest rates of some 2 per cent over the 3 – 6 months interbank rates, giving an initial cost of about 12 per cent. They have already lent several hundred million pounds in this way and have thus become the principal source of loan capital for industry.

Variable interest loans with a stock exchange listing have not yet been properly tested in the UK. There have been only two such issues, the largest for only £5 million. There were some larger issues in the US during 1974, including one for \$150 million by Standard Oil Company of Indiana, but the fall in interest rates in that country has now made fixed interest loans viable again.

Martin Gibbs

Corporate Models Today: A New Tool for Financial Management. Peter H. Grinyer and Jeff Wooller. Institute of Chartered Accountants in England and Wales, 1975. pp. xiv + 316. £7. Your reviewer confesses to having read this book after a belated discovery of Graham Cleverley's *Managers and Magic* (Pelican 1972). That engaging

work reminds us that much 'management' activity is no more than the natural human reaction to uncertainty – and so on a par with the magico-religious ceremonies of even more primitive tribesmen. Thus budgets (and so corporate models) often have uncomfortable parallels with what anthropologists describe as 'sympathetic magic', where an enactment of what one hopes will happen is performed to ensure that it does happen.

I am not trying to be funny at the authors' expense by opening my comments with a reference to Cleverley's work; this is because Cleverley isn't really trying to be funny either. Experience as an accountant and as a university semi-administrator has provided me with plenty of evidence that rigorous post-mortems on budgets are very rare indeed. Budgets and models seem to have more in common with shopping-lists than with forecasts – perhaps some idea of getting our thoughts straight on the situation before us rather than some more purposeful attempt to forecast, let alone optimally manipulate the future. It may be significant that the authors (p. 24) place their emphasis on simulation modelling and relegate optimisation techniques to operational research tests. Of course there are many other snags to multi-objective optimisation which would tip the scales towards simulation anyway, but there is a certain 'looseness' about simulation which makes Cleverley-style criticism fairly easy to substantiate.

The authors tell us 'There are four common approaches to model testing. Because no single one, or even all jointly can guarantee the validity of the model, all four are often followed. First the model may be run with historical data to see if the model produces actual past results with sufficient accuracy . . . Second the model may be run with variations in input data, and management can be asked if it responds in the way to be expected . . . A third approach is to discuss particular relationships with informed managers and technical specialists . . . Finally, where relationships based on observed data rather than accountancy logic are used, it is often possible to test their validity statistically' (pp. 82–3).

Several interesting issues emerge here. Taking the last point first, it can be seen that the sort of 'validation' best loved by, say, the economists is rarely used. This is because the models described in this book are *not* models of the causal relationships seen as existing in the enterprise, but rather models of its 'accountancy logic', plus some fairly rough-hewn estimates (dare one say) of how the inputs into the accounting system may be expected to change over time. The *causes* of those changes are not discussed at all. This can be seen from the description of the ATV model on pp. 64–83; thus $(Pr(\text{year } N + 1) =)$

PROFIT B(e)F(ore). INTEREST = $Pr(\text{year } N) \times \text{growth factor}$ ' (p. 66). Parameters like the growth factor are not arrived at by statistical inference from past results – it may well be that the past is precisely what the management do not want to perpetuate into the future – so tests for 'fit' have no great meaning here. All that can be asked is that it does its book-keeping correctly under even the most extreme circumstances. Then, because underlying causal relationships *do* exist in fact, these rather arbitrary growth factors and tables of 'separate data' referred to in these models are themselves correlated to varying degrees, so an additional test is indeed to see whether changes in inputs produce the effects expected by experienced managers.

Now what I have written here seems to be a denunciation of the whole basis of the book under review – but it is not. This sort of Catch 22 logic appears continually in my own work. It is clear that this is the human response to a totally unstructured problem. Cleverley notwithstanding, a manager has to make some decision about the problem, whether the scientists have constructed proper causal models or not. If the models don't exist, he marshalls his thoughts about the phenomena in a consistent and comprehensive way, which turns out to be an exercise in 'accountancy logic' as the authors tell us. Provided that readers appreciate that it is this sort of model-building that is under discussion in this book, they will come to no harm.

How does the book measure up, given this limitation? Really, it falls into two parts, of which the book proper is the first 184 pages; the remainder comprises a number of appendices, mostly setting out the details of a survey on corporate financial modelling in the U.K. carried out by the authors. Obviously the first part is an expanded writing up of that survey material. Again, this is no criticism, since the real purpose of the book (in your reviewer's opinion at least) is to provide an executive charged with a feasibility study into corporate modelling with the information allegedly hard-headed 'top management' need to make up their minds about this particular unstructured decision. To this end it goes into commendable detail about languages, packages, bureaux and comparative costing; obviously some of this material has the life-expectancy of a taxation manual, but it looks 'fair enough' to me at the moment. Its shortcoming is that it doesn't tell us very much about measuring the benefits which the operation may be expected to produce. Indeed, the authors disarm criticism by this artless statement on p. 63 '... it is extremely unlikely that any objectively based estimate of financial benefits likely to stem from a corporate model can be made'. The non-financial

benefits seem uncomfortably close to the Cleverley thesis.

Nevertheless, if the happy day should ever dawn when British companies can once again spend money on interesting projects whose financial benefits are *prima facie* obscure, this will be a useful reference book.

Trevor Gambling

Modern Accounting: Accounting as the Information System for Technological Change. Trevor Gambling. The Macmillan Press Ltd, 1975. pp. ix + 208. £10.

In the conclusion to his book, Professor Gambling points out that it '... has been devoted to various aspects of the way in which the information system of an enterprise (basically its accounting system) reflects the underlying reality of its structure and operations'. The first part of the book deals, in some detail, with the accounting system as a model of the physical characteristics of a firm's manufacturing and distribution processes. In the second part the analysis is extended to cover the total information system of the firm, with particular emphasis on the probabilistic nature of the data being used and the feedback aspects of the system. As might be expected, the second part is rather more abstract than the first.

The book contains an intriguing mixture of the practical and the theoretical. Professor Gambling's descriptions of alternative methods for modelling cost structures are both comprehensive and stimulating. The prescriptive material is less convincing, however. In particular, little discussion is included of the user groups assumed to be interested in the information generated by the accounting system, or of their possible information needs. In consequence, the techniques developed occasionally appear to lack relevance for decision purposes. Indeed, in his discussion of Lieberman charts in Chapter 5, Professor Gambling includes an example based on the calculation of an overhead absorption rate – a procedure not generally recommended in the normative accounting literature!

The sections on the probabilistic nature of the data being used provide a thorough coverage of the statistical aspects of probability theory, although some discussion of the relevance of portfolio analysis and utility theory would provide a useful extra dimension to the analysis. In addition, the arguments in Chapter 1 in favour of 'economic accounting' (i.e. with asset values calculated using discounted cash flow methods) appear slightly dated in the light of recent developments in financial accounting theory.

The occasional lack of attention to the normative

aspects of the accounting system developed are unfortunate; in other respects the book provides an interesting and often original analysis of the role of accounting as an information system in modern business. The subject is tackled as a complex real world problem and Professor Gambling applies a wide range of skills in his attempts to indicate methods of solution. He credits the reader with what is, for most accountants, an advanced level of mathematical competence. For example, the application of mathematical programming is discussed, but neither the method itself nor its limitations as a tool of economic analysis are explained in any detail.

Professor Gambling's book is based on his doctoral thesis. Its purpose was stated in the quotation at the beginning of this review. The emphasis is on the problems of modelling the information system of an enterprise descriptively rather than prescriptively. The book succeeds in meeting this objective, and should be rewarding to the reader who is able to cope with the relatively advanced methods used.

On a more mundane level, the very lengthy 'foot-notes' (included at the end of each chapter) increase the difficulty involved in reading the text, and are hard to justify. If their contents are important (which they generally are in this case) they should be included in the main text. If not, they might usefully be omitted! Finally, the price of £10 is likely to put the book beyond the reach of many potential readers.

John Arnold

International Financial Reporting; Comparative Glossary of Accounting Terms in Canada, the United Kingdom and the United States; Accounting for Goodwill. Accountants' International Study Group, June 1975. \$3 each.

The 'splendid isolation' of accountants in different countries is well and truly over. The ever-increasing internationalism of business and investment activity has seen to that. No longer can reporting accountants shelter behind their national boundaries, unconcerned or even uncaring about reporting standards in other countries. International investment has ensured that an accountant can no longer limit his attention to domestic standards but must also take cognisance of the need to employ standards which comply with the laws and regulations of other countries.

These developments have created a need for the major professional accountancy bodies of the world to work actively together in an attempt to minimise the differences in reporting standards which exist between countries. One of the earliest efforts at such co-operation is the Accountants' International Study

Group (AISG) comprising representatives from the major professional accountancy bodies in the United Kingdom, the United States and Canada. The AISG has been in existence since 1966 and has produced thirteen comparative studies of reporting practices since 1968. The purpose of these studies is to produce comparative analyses of practices in order to enhance international co-operation within the accountancy profession. However, they have the additional advantage that their conclusions and recommendations are a useful basis for eventual harmonisation of reporting practices.

The three latest studies of the AISG highlight the considerable problems of international standardisation. The first, entitled *International Financial Reporting*, examines the problems in the widest context – that is, in relation to the form and content of financial statements and the auditor's report thereon. The single most important aspect of this study is the statement of the need for reporting accountants to distinguish between primary financial statements (that is, those prepared primarily for use in the company's country of domicile) and secondary financial statements (that is, those prepared for use in other countries and subject to the varying standards and laws of those countries). The need for reporting accountants, particularly auditors, to be familiar with reporting standards in other countries is also adequately emphasised, as is the need to identify, particularly with secondary statements, the countries to which the standards used apply. The problems facing the auditor in these situations have already been discussed in earlier studies, *The Independent Auditor's Reporting Standards in Three Nations* and *Using the Work and Report of Another Auditor*, both published in 1969.

The next study, *Comparative Glossary of Accounting Terms in Canada, the United Kingdom and The United States*, is arguably the most useful of the three studies being reviewed. As well as very clearly highlighting the accounting differences which can exist between three relatively well-developed nations, it provides the reporting accountant with a concise selection of terms which he can refer to when preparing and using financial reports. This is the one area where, hopefully, some rational harmonisation can take place – the differences between the three countries are too great to ignore this opportunity. For example, the term accounting principles is defined in the UK as concepts, bases and policies; in the US as pervasive, broad operating and detailed principles; and in Canada as concepts, principles and procedures. This study is particularly recommended to all interested accountants.

The last study to be reviewed, *Accounting for*

Goodwill, deals with one of the most vexed of reporting problems – that is, what is goodwill, when does it appear, and how should it be treated. The recommendation that purchased goodwill should be treated as an intangible asset and amortised to income over its expected useful life is a controversial one; but at least it is an attempt to standardise practice in an area where there is quite clearly little uniformity. The study contains a well written summary of the different ways of accounting for goodwill, and should provide useful material in this respect for students of accounting.

All three studies, as with others in the series, fulfil their stated aim – comparative analyses with a view to future harmonisation. Each is clearly written on a difficult subject and well worth reading. It is to be hoped that they will not remain as additions to the accounting bookshelf but, instead, will be used consistently to develop the pursuit of international standardisation of reporting practices.

T. A. Lee

Historical Accounting Literature. A catalogue of early works on book-keeping and accounting in the Library of the Institute of Chartered Accountants in England and Wales, together with a bibliography of literature on the subject published before 1750 and not in the Institute Library. London, Mansell, 1975. pp xxvi + 360. £20.

The publication of this new catalogue is an event of great importance, in view of the rapid growth both of the fine Library of the Institute and of interest throughout the world in the history of accounting. The book is presented as a comprehensive bibliography of early accounting literature, and accordingly includes a section listing books published before 1750 which are not held in the Institute's own Library; but it also serves as a more general bibliography, providing a broad coverage of the literature of book-keeping and accounting up to the mid-1930s, as well as more recent books on the historical aspects. It is prefaced by a magisterial introduction by B. S. Yamey surveying the first four centuries of the literature.

In order to reflect both the geographical and the historical development of accountancy, the main section of the work, entitled 'Book-keeping and Accounting', is divided by language (the Dutch and German sections being subdivided by town of publication and the English by country) and then arranged chronologically. Smaller sections are devoted to such topics as Histories, Bibliographies, Public Accounts, Account Books, Commercial Law,

Commercial Arithmetic, Actuarial Science, and even Calligraphy and Lithography. There is a full author index. There are some apparent anomalies in the assignment of books to these subject sections; and the reviewer wonders whether, for instance, the 'Allerhöchste Instruction für die Landes-Buchhalter' (1688), and perhaps Hertel's book on the Preussische Ober-Rechnungskammer (1884), might not better have been included in the small section on Public Accounts.

The titles of books are fully reproduced, though by no means without solecisms in the transcription of titles in foreign languages. In general the compiler has cautiously refrained from any attempt to assign books without imprint to any place or press. Since, however, the books in each section are arranged in chronological order, with undated works placed at the beginning of the decade in which they probably appeared, he has had to form views on dates of publication. It is interesting, for instance, that he should have thus placed the anonymous 'Modo novamente ritrovato ch'insegna tener libro doppio', printed in Venice by Domenego dei Franceschi, immediately before 1540, although it was dated [c. 1551] by Thomson and Yamey.¹ A date about 1564 may, however, be deduced from the facts that (a) the earliest dated item by dei Franceschi was printed in 1563² (b) this item must antedate the second, corrected edition issued by the same printer in 1565 (listed by Thomson and Yamey,³ but not included in this volume). The Institute copy of Brambilla's 'Studj e discorsi', the entry for which contains no imprint or date and is inserted in chronological sequence immediately before 1880, has on its title page the imprint 'Milano, 1906'.

The description of books with pre-1800 imprints contains a statement of format and collation. Contrary to the normal convention of describing a perfect copy of the book, and then noting imperfections in the actual copy described, the collation lists the leaves actually present in the Institute copy, thus in many cases recording quires with odd numbers of leaves. Though Bühler has defended this practice in the case of fifteenth-century books,⁴ its use in the present volume may cause more speculation than enlightenment to users for whom collation is important. A similar general approach to cataloguing has led to

¹Thomson, H. W. and Yamey, B. S. *Foreign books on book-keeping and accounts* (1968), p. 7.

²British Museum, *Short-title catalogue of books printed in Italy . . . from 1465 to 1600* (1958), p. 826.

³Op. cit., p. 8.

⁴Bühler, C. F., *Bibliographical descriptions of incunabula* (1949), p. 28.

G. A. Moschetti 'Universal trattato di libri doppii' being given the imprint and note 'Venetia: Luca Valentini, 1690. [Date erroneous. Should be 1610.]' The user should be warned that this does not refer to a variant with the printed date 1690, but simply reflects the fact that a previous owner of the Institute's copy has added a manuscript C to the printed date MDCX.

One of the most valuable sections of the book is the chapter listing 'books and first editions prior to 1750 not contained in the Library of the Institute'. From a comparison with Thomson and Yamey⁵ it is gratifying to see that several important desiderata have been added to the Library since 1968; but it is disappointing to find that at least 19 items in that work, which should have been included in the section however rigorously the rubric quoted above is interpreted, have been omitted. Nor is there any mention of the edition of Tagliente's *Libro de Abaco* printed in Venice in February 1515⁶, though the Institute copies of the editions of 1564 and 1586 are included in the section on commercial arithmetic. It would have been particularly useful for students of the period if each entry in this section had been supported by a note of the Library in which a copy may be found or, where this is not possible, of the source of the compiler's information. Such notes to the first two entries might for instance have shown (a) whether the anonymous *Opera che insegna a tener libro doppio*, listed without any statement of printer or date, is the same edition as that stated by Thomson and Yamey⁷ to be dated 1529; and (b) directed the reader to the evidence for the existence and authorship of the oldest English book on accounts, Oldcastle's *Profitable treatyce*, 1543.⁸

An interesting section is the 'list of illustrations from early books in the Institute Library', complete with an index of artists. The majority refer directly to commerce and book-keeping, though some are printers' frames or devices of more general reference. The cut of a hand and quill on the title leaf of the undated *Un modo novamente . . .* (referred to above) might well have been included.

⁵Op. cit.

⁶Graesse, J. G. T., *Trésor de livres rares et précieux* (1859-69), t. 6, pt. 2, p. 21.

⁷Professor Yamey kindly informs me that this entry reflects the Venice, 1529, 16^o edition listed by Besta, F., *La Ragioneria* (1929) v. 3, pp. 380-1, citing Cerboni, G., *Elenco delle opere di ragioneria* (1886) p. 24, which states that there is a copy in the Biblioteca Comunale Joppi at Udine. The Director of that Library has, however, informed me that the copy cannot be found.

⁸Yamey, B. S., and others, *Accounting in England and Scotland: 1543-1800* (1963), p. 155-6.

A 'Supplement, updated to 31st August 1975' has now been issued with commendable speed. In addition to listing new acquisitions and recording some corrigenda, the opportunity has been taken to explain the basis of the classification of the entries in the main work, and also to include a number of items omitted from the list of early books not contained in the Institute Library. The new entries include two German pamphlets on commercial book-keeping, without place or date of publication, written by J.Ch.K. Was the author perhaps Johann Christian König (1660-1736) of Leipzig, whose inaugural dissertation, in 1712, was on bills of exchange, and whom the Kress Catalogue⁹ shows to have continued to write on this topic?

The book is handsomely produced, by direct photography from catalogue cards, and is illustrated by a number of facsimiles.

D. A. Clarke

Modern Financial Accounting. G. A. Lee. Thomas Nelson and Sons Ltd., 2nd edition, 1975. xii + 614 pp. £4.95.

This considerable undertaking was first published in 1973 and has since been adopted as a prescribed text by the Institute of Chartered Accountants of Scotland. Its professed aim has been to present financial accounting to more advanced students of accounting in universities, polytechnics, establishments of further education and in training for professional qualifications. A prior knowledge of book-keeping is therefore assumed. In the preface it is also claimed that the author has tried to break away from the traditional technique-orientated approach.

The book is presented in two parts. Part 1 is concerned with accounting principles and practice and includes chapters on data processing systems, the development of accounting thought, asset valuation and income measurement and accounting for price level changes. Part 2 is concerned with 'financial accounting in modern Britain' and includes chapters on accounting for unincorporated businesses, accounting for limited liability companies, consolidated accounts, accounting for liquidations and the analysis of published accounts. An appendix of essay topics and exercises is also provided.

The strengths of this book must lie in the interesting summary of the development of accounting thought which appears in chapter 4, in the useful coverage of foreign exchange transactions and in the clear treatment of replacement cost and CPP accounting.

⁹Catalogue supplement, 1473-1848 (1967), items S 2589 S 2751, S 3441.

As the author states in his preface, Part 2 is designed more specifically for students of the final examinations of the main accountancy and allied professional bodies. In doing this, it takes a relatively legalistic approach to accounting and deals with the pronouncements of the Accounting Standards Committee and the requirements of the London Stock Exchange and Panel on Takeovers and Mergers in considerable detail. This detailed and relatively mechanical approach might not recommend itself to such prospective users as university departments who may require a more critical and philosophical approach with less emphasis upon the daily details of present day British practice.

In Part 1, a few specific criticisms might be made. Chapter 1 contains 'A simple book-keeping example' which extends from pp. 17-23 inclusive and an addendum, a 'mathematical proof of the dual aspect concept', on p. 27. Whether the introduction of such detailed aspects is appropriate at this early point of a book is debatable. Chapter 2 suddenly confronts us with management accounting and covers it in 25 pages of which 18 are filled with double entry accounts. In the reviewer's opinion standard costing could be better explained than by a $1\frac{1}{2}$ pages of descriptive writing and 5 pages of double entry accounts.

For a text which purports to provide a more rigorous treatment of the accounting discipline for advanced students, this book is remarkably brief in its treatment of such topics as EDP (3 pages), concepts of inventory costing (4 pages), absorption costing ($3\frac{1}{2}$ pages), funds flow accounting ($5\frac{1}{2}$ pages) and divisional accounting and transfer pricing (5 pages). Whether all these topics should appear in a financial accounting book is of course also a subject for debate. The treatment of the realization concept in chapter 5 could also be improved and some discussion of the criteria for revenue recognition

would not go amiss. In an advanced text of this nature some examination of the difficulties of classifying some expenditures as assets or expenses might also have been expected. The explanation of ratio analysis in chapter 18 begins with promise, but instead of providing separate examples resorts to one massive case example 29 pages in length. Any student who had the courage to wade through that must deserve some award, at least for determination.

The reviewer feels that several basic problems have beset this text book. It aims to provide a more rigorous treatment of students' existing knowledge and yet in a number of areas is brief almost to the point of being perfunctory. Its exercises are drawn from the past examinations of professional accounting bodies and this may not recommend it for University and Polytechnic courses. Whether a text of 513 pages (excluding appendices) ought to contain approximately 165 pages of accounts is of course a matter of personal opinion. The legal/professional Part 2 takes up 300 pages and hence has caused some topics to be separated from related foundation material in Part 1. In the reviewer's opinion this book is the exact opposite of what it claims to be. It concentrates upon a traditional technique-oriented approach and treats many aspects of accounting more superficially than elementary accounting texts. The order of treatment of some aspects might also seem unusual to some readers.

Of course this text represents a considerable contribution to material available for students preparing for professional examinations, but it may prove less than satisfactory for university and polytechnic courses. If the reader requires a textbook to be more than an annotated guide to current knowledge or practice and to pose problems, identify issues and encourage thought then this book may not be the most suitable.

Lee Parker

Contributors to Accounting and Business Research

Volume 6 No 22 Spring 1976

R. J. Briston, BSc(Econ), FCA, is Head of the Department of Accountancy and Finance in the University of Strathclyde. He graduated from the London School of Economics in 1958 and qualified as a chartered accountant in 1961. In 1963 he joined Hull University and moved to the Bradford Management Centre in 1969. He took up his present position in 1972. He is the author of *The Stock Exchange and Investment Analysis* and has contributed many papers and articles to various academic and professional journals. He is currently undertaking research in the field of development accounting and has for the last two years been involved in a project of aid, financed by the British Government, for the accountancy profession in Indonesia. He is also a practising accountant, being a partner in French and Cowan, a Glasgow firm of chartered accountants.

R. J. Chambers, BEC, DSC(Econ), is Professor of Accounting in the University of Sydney. He has been a visiting professor in the Universities of Chicago, California (Berkeley), Stanford, Washington, Florida, Kansas and Waseda (Tokyo). He is the author of six books, and over a hundred articles, published in a dozen countries, on accounting, finance and management. He is a fellow of the Academy of the Social Sciences in Australia, and is currently a vice-president of the Australian Society of Accountants. From 1965 to 1974 he was editor of *Abacus*.

Adolf J. H. Enthoven is Professor of Accounting and Director of the Center for International Accounting Development at the University of Texas at Dallas. He previously taught at the University of Illinois, Harvard University and the University of North Carolina. He has been associated with Coopers and Lybrand as Director – Europe and the World Bank as Senior Investment Officer. He carried out a one year survey in Asia and Africa for the Ford Foundation.

C. S. Greensted, BSc, MSc, graduated from London University in 1965 and obtained an MSc in Operational Research in Strathclyde University in 1968. He has been an Operational Research executive in the food industry and joined the Operational Research department in the University of Strathclyde in 1969. He transferred to the Department of Accountancy and Finance in that university in 1975. He has written two books on statistical methods and two reports on forestry policy and unemployment.

P. N. McMonnies, CA, is at present UK Director of Accounting and Auditing Research with Thomson McLintock and Co. He assumed this position recently after twelve years with the Institute of Chartered Accountants of Scotland where he was in charge of the Research Department and also for many years Technical Editor of *The Accountant's Magazine*. Before that he spent sixteen years in East Africa, both in public practice and in commerce and industry.

M. J. Mumford, BCom, MA(Econ), ACCA, is Senior Lecturer in Accounting at the University of Lancaster. After seven years in industry and a Dunlop Scholarship at Liverpool University, he took his MA in Economic Theory at MacMaster University, Canada. He then lectured at the UCW Aberystwyth and the University of Nairobi. After three years as director of post-graduate courses in accounting at Lancaster, he has now been able to resume his research interests, centring primarily upon replacement cost accounting, but also including the history of accounting thought, on which he lectures to BA and MA courses.

C. Nottingham, MSc, ACCA, is a Lecturer in the Department of Management Studies at the University of the West Indies. His MSc is from Bradford University Management Centre. After leaving the practising side of the profession he spent a period as System Accountant with Rand Mines in South Africa, followed by systems-orientated consultancy work in the United Kingdom. His present research interests lie in the area of recognition and rectification of unprofitable segments of business organisations.

John Sizer, BA, FCMA, MBIM, is Professor of Financial Management and Head of the Department of Management Studies at Loughborough University, and also currently Dean of the School of Human and Environmental Studies. He was formerly Senior Lecturer in Accounting and Assistant Academic Dean (MSc Programme) at the London Business School, and previously Assistant Accountant, Clover Dairies Ltd., Financial Adviser, GKN Ltd., and Lecturer in Management Accounting at the University of Edinburgh. He is the author of *An Insight into Management Accounting* (Penguin, 1969) and *Case Studies in Management Accounting* (Longman, 1974; Penguin, 1976). He frequently contributes to the leading British accounting and management journals. He also undertakes consulting work and conducts seminars for a number of leading international companies.

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Reconciling Sandilands with Current Purchasing Power Adjustments

Andrew M. McCosh and Richard F. Vancil

The recent publication of the Sandilands report is a major step forward in the development of financial accounting. The report is the first formal statement by a group with governmental authority in the English-speaking world that historic cost accounts are inferior for all important purposes to value-based accounts. The Dutch have been making comparable adjustments for many years, but the British and the Americans have, until very recently, been most reluctant to abandon the principle that the originally invested capital must be recovered before any 'profit' has been earned. This capital might be measured in the original currency or in terms of the purchasing power of the originally invested amount, but the principle was the same. Sandilands was a major breakthrough, in that it recognised that the relevant base point for profit generation was only incidentally related to the original investment, but was primarily a function of the firm's capacity to sustain its activities within the industry. The committee sought to give general recognition to the idea that the only realistic measure of profit for a firm was the amount it could distribute to shareholders and still be capable of regenerating its existing level of operations at current prices. In the process of advocating its case, the committee was firm in rejecting the general price level adjustment methods recommended by the Institutes of Chartered and Certified Public Accountants.

In this article, we suggest that while it may be politically sensible for the committee to go wholeheartedly for replacement costs because that is indeed the most important step forward and leads to a correct income measure, it would still be of use to allow the Institutes' proposals to be implemented. We contend that the correct answers obtained by the Sandilands method can usefully be sub-divided to reveal informative additional numbers by using the principles of price level adjustment. We shall use a multi-period example to illustrate how this additional information can be devised and what it can tell the investor. An important conclusion of this article will

be that the adoption of the Sandilands model does not preclude the subsequent or concurrent derivation of all the important information found in general price level adjusted accounts, so that the loss of the latter information in the basic replacement cost accounts should not be used as an argument against such statements.

The Sandilands method, about which much has already been written, can be quickly reviewed. The conventional historic cost accounts are used throughout as the basic data. However, the method also requires the incorporation of two extra journal entries. The first, made prior to the depreciation computation, takes the recorded figure for fixed assets up to replacement cost as measured by a relevant index. The other raises inventories (stocks) to their replacement value at the end of the year. Both will tend to cut into operating income in an inflationary period, when the higher depreciation and the extra cost of goods sold are charged.

The various methods of inflation adjustment depending upon general price indices are also well known in the literature. In these methods the first step is to work out the monetary gain or loss arising from holding net monetary credit or debit balances. The income account is then restated by reference to the general index values, usually reducing the income during inflation, and the net monetary gain is added. The beginning balance sheet is restated in year-end currency, the assets and liabilities of the ending balance sheet are restated, and the total income computed as above should bring about a balance. This process has been fully discussed in the literature, and is reviewed in Exhibit 2 below.

Among the merits claimed for the general index method are the isolation of the monetary gain or loss, the comparability of the profit and loss accounts over the years when they are all stated in current purchasing power and the comparability of balance sheet ratios when similarly restated. Its main disadvantage, of course, is that the restatement of asset costs in general purchasing power terms may well be of

little relevance to the investor who remains committed to the industry in which the company has been involved. It is a marginal gain, at best, to know that the purchasing power previously committed to the assets has been preserved, if no comment is made about the purchasing power that would be needed to sustain the company's operating capacity.

The last problem has been solved by the Sandilands report. But they lost the information mentioned in the last paragraph in the process, and they lost it unnecessarily. Let us look now at an example of how the benefits of both can be retained.

A review of the most-favoured methods

We will be working throughout this paper with a single, contrived, example company, which turns over its inventory once a year and employs machinery

which has a life expectancy of three years. Both the inventory and the plant are subject to an inflation rate of 10% per year, while the general rate of inflation is 15% per year. The company is financed 40% with debentures and 60% with ordinary shares. The interest rate on the debt is 20%. As a further simplification, we have ignored taxes throughout the example. We have found in previous calculations that the inclusion of tax does not change the points which we are trying to make here, merely making the examples more complex.

One of the most generally accepted definitions of economic income is the amount which the company could distribute and still be as 'well off' at the end of the period as it was at the beginning. We decided to establish a dividend policy of exactly this kind; namely, that the entire amount of the operating profit derived by current replacement value account-

EXHIBIT 1

Historical cost accounts

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Assets							
Plant	30,000	31,000	33,100	36,410	40,051	44,056	
Accum. depn.	(10,000)	(10,000)	(10,332)	(11,365)	(12,502)	(13,752)	
Stock	10,000	11,000	12,100	13,310	14,641	16,105	
Total	30,000	32,000	34,868	38,355	42,190	46,409	
Liabilities and Equity							
Debt	12,000	12,000	12,000	12,000	12,000	12,000	
Equity	18,000	20,000	22,868	26,355	30,190	34,409	
Total	30,000	32,000	34,868	38,355	42,190	46,409	
Income Statement							
Sales revenue		31,900	35,090	38,599	42,459	46,705	194,753
Cost of sales		(10,000)	(11,000)	(12,100)	(13,310)	(14,641)	(61,051)
Depreciation		(10,000)	(10,332)	(11,033)	(12,137)	(13,350)	(56,852)
Operating profit		11,900	13,758	15,466	17,012	18,714	76,850
Interest		(2,400)	(2,400)	(2,400)	(2,400)	(2,400)	(12,000)
Profit		9,500	11,358	13,066	14,612	16,314	64,850
Beginning equity		18,000	20,000	22,868	26,355	30,190	18,000
Dividends		(7,500)	(8,490)	(9,579)	(10,777)	(12,095)	(48,441)
Ending equity	18,000	20,000	22,868	26,355	30,190	34,409	34,409
Ratios							
Change in sales		—	10.0%	10.0%	10.0%	10.0%	
Change in operating profit		—	15.6%	12.4%	10.0%	10.0%	
Change in net profit		—	19.6%	15.0%	11.8%	11.6%	
Return (op. profit) on begin. investment		39.7%	43.0%	44.4%	44.4%	44.4%	
Return on equity		52.8%	56.8%	57.1%	55.4%	54.0%	
Debt/equity at year-end		60.0%	52.5%	45.5%	39.7%	34.9%	

ing procedures would be distributed as dividend after allowing for the interest payments.

Obviously, if the current replacement value accounting method is the appropriate one, the company should be exactly as well off at the end of the period (which we have arbitrarily set at five years) as it was at the beginning. In practice, we shall find that the dividend policy mentioned above does not leave the company exactly as well off as before. A higher distribution is possible in view of the presence of the debentures.

The conventionally prepared financial statements on an historical cost basis are shown in Exhibit 1. Each of the machines is purchased on the last day of a financial year, is depreciated in each of the ensuing three years and scrapped on the last day of the third year. The steady increase in the balance on machinery

account represents the 10% per annum growth in the cost of the machines being replaced. A similar growth affects the cost of inventory.

Exhibit 1 indicates that the firm has been reasonably prosperous during this time period. A 10% average annual increase in sales has led to a 10% increase in operating profits and a 12% increase in net profits in the later years. The return (operating profit divided by starting total investment) stabilises at 44% in the second year and remains at that level. The return on equity (net profit divided by starting equity) is 53% in the first year, and stays very close to that figure. The debt to equity ratio declines from its initial 66.7% value to 34.9% at the end of Year 5. A general picture of prosperity and growth is presented. But is the picture correct? Does it really measure the change in 'well-offness' in any meaning-

EXHIBIT 2

General price level accounts in year 5 currency

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Total
<i>Assets</i>							
Plant	60,341	59,466	57,755	55,245	52,843	50,548	
Accum. depn.	(20,114)	(20,114)	(19,822)	(18,961)	(18,136)	(17,351)	
Stock	20,114	19,239	18,403	17,603	16,837	16,105	
Total	60,341	58,591	56,336	53,887	51,544	49,303	
<i>Liabilities and Equity</i>							
Debt	24,136	20,988	18,251	15,870	13,800	12,000	
Equity	36,205	37,603	38,085	38,017	37,744	37,303	
Total	60,341	58,591	56,336	53,887	51,544	49,303	
<i>Income Statement</i>							
Sales revenue		55,793	53,368	51,047	48,828	46,705	255,741
Cost of sales		(20,114)	(19,239)	(18,402)	(17,602)	(16,837)	(92,194)
Depreciation		(20,113)	(19,822)	(19,252)	(18,415)	(17,614)	(95,216)
Operating profit		15,566	14,307	13,393	12,811	12,254	68,331
Interest		(4,198)	(3,650)	(3,174)	(2,760)	(2,400)	(16,182)
Monetary gain		3,148	2,737	2,381	2,070	1,800	12,136
Total		14,516	13,394	12,600	12,121	11,654	64,285
Beginning equity		36,205	37,603	38,085	38,017	37,744	36,205
Dividend		(13,118)	(12,912)	(12,668)	(12,394)	(12,095)	(63,187)
Ending equity	36,205	37,603	38,085	38,017	37,744	37,303	37,303
<i>Ratios</i>							
Change in sales		—	(4.3)%	(4.3)%	(4.3)%	(4.3)%	
Change in operating profit		—	(8.1)%	(6.4)%	(4.3)%	(4.3)%	
Change in net profit		—	(7.7)%	(5.9)%	(3.8)%	(3.9)%	
Return (op. profit) on begin. investment		25.8%	24.4%	23.8%	23.8%	23.8%	
Return on equity		40.1%	35.6%	33.1%	31.9%	30.9%	
Debt/equity at year-end		55.8%	47.9%	41.7%	36.6%	32.2%	

ful sense?

Let us take a look at Exhibit 2. This is the same company in the form of general price level adjusted statements, all expressed in the currency of the end of Year 5.¹ The procedure for converting and restating financial statements in purchasing power terms is well understood and has been fully described elsewhere, so we will spend no time discussing the technique. It is sufficient to notice that a monetary gain is separately recognised in the income statement under this procedure and that this monetary gain represents the benefit accruing to the stockholders because the debentures are fixed in monetary amount.

¹For example, the figure for Plant in Year 0 in Exhibit 2 is derived by multiplying the cost, 30,000, by the 15 per cent price index for five years. Thus, $30,000 \times (1.15)^5 = 60,341$.

The gain, because we have made all the transactions happen at the end of each year, is equal to the rate of general inflation applied to the debt balance, amounting to 15% of the debenture liability. In Year 1, for instance, the gain is 15% of 20,988, or 3,148. The amounts are different, of course, because the whole statement is expressed in Year 5 currency, as mentioned above.

The picture shown by Exhibit 2 is quite different from that shown in Exhibit 1. Instead of growth, there is slow decline. The average annual rate of decline of sales revenue is 4%, and the same figure holds in latter years for operating profit and net profit. The return on investment is stable at 24%, but the return on equity falls from 40% to 31% over the five-year period. These figures are shown in Exhibit 6, comparatively for all the methods, as well as in

EXHIBIT 3 Replacement cost accounts

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Total
<i>Assets</i>							
Plant	30,000	33,000	36,300	39,930	43,923	48,315	
Accum. depn.	(10,000)	(11,000)	(12,100)	(13,310)	(14,641)	(16,105)	
Inventory	10,000	11,000	12,100	13,310	14,641	16,105	
Total	30,000	33,000	36,300	39,930	43,923	48,315	
<i>Liabilities and Equity</i>							
Debt	12,000	12,000	12,000	12,000	12,000	12,000	
Equity	18,000	21,000	24,300	27,930	31,923	36,315	
Total	30,000	33,000	36,300	39,930	43,923	48,315	
<i>Income Statement</i>							
Sales revenue		31,900	35,090	38,599	42,459	46,705	194,753
Cost of sales		(11,000)	(12,100)	(13,310)	(14,641)	(16,105)	(67,156)
Depreciation		(11,000)	(12,100)	(13,310)	(14,641)	(16,105)	(67,156)
Operating profit		9,900	10,890	11,979	13,177	14,495	60,441
Interest		(2,400)	(2,400)	(2,400)	(2,400)	(2,400)	(12,000)
Holding gain		3,000	3,300	3,630	3,993	4,392	18,315
Profit		10,500	11,790	13,209	14,770	16,487	66,756
Beginning equity		18,000	21,000	24,300	27,930	31,923	18,000
Dividends		(7,500)	(8,490)	(9,579)	(10,777)	(12,095)	(48,441)
Ending equity	18,000	21,000	24,300	27,930	31,923	36,315	36,315
<i>Ratios</i>							
Change in sales		—	10.0%	10.0%	10.0%	10.0%	
Change in operating profit		—	10.0%	10.0%	10.0%	10.0%	
Change in net profit		—	12.3%	12.0%	11.8%	11.6%	
Return (op. profit) on begin. investment		33.0%	33.0%	33.0%	33.0%	33.0%	
Return on equity		58.3%	56.1%	54.4%	52.9%	51.6%	
Debt/equity at year-end		57.1%	49.4%	43.0%	37.6%	33.0%	

Exhibit 2. It is quite probable that many companies would find that their accounting statements were similarly transformed by general price level adjustment. Many British companies *did* so discover during the experimental period recommended by the Accounting Standards Committee.

Exhibit 3 offers the replacement cost accounting representation of the same company. This method, of course, is the one Sandilands chose and as this has been also very fully discussed in the literature, there is no need to spend time explaining it. The 10% specific price level growth is reflected in the asset balances and, of course, in the depreciation charge. The result is a holding gain of 10% of the starting asset total. The resulting trends include a 10% average annual growth rate in operating profit and a 12% average annual growth rate in net profit. The return on investment is stable at 33% (which is not surprising since that was how the example was constructed). The return on equity, however, declines slowly from 58% in Year 1 to 52% in Year 5. The debt to equity ratio moves from 66.7% at the outset to 33.0% at the end of Year 5.

A feeling of discomfort

When one looks at the various income-measurement methods exemplified by Exhibits 1-3, one feels uncomfortable. This is not because of the differences between the answers, though that is distressing enough, especially to the layman. It is because there is no obvious 'winner'. The method of Exhibit 1, historical costs, has tradition and general understanding on its side. The general price adjustment method in Exhibit 2 gives better trend pictures because it states all items in a common unit of measurement. It also isolates the value of the benefit the stockholders get from issuing unindexed debentures, and generally from having a group of creditors who are willing to accept cheap 'now' money in settlement of expensive 'then' debts.

But it has one big omission. It pays no attention to the actual portfolio of assets of the firm and the price trends affecting that portfolio. The replacement cost method does deal with this issue, of course. The asset values in Exhibit 3 are the costs that would be incurred now to replace the existing portfolio of assets, without any reference to general purchasing power trends at all. But how can we really compare one year of the replacement cost statements with another? For instance, in Exhibit 3, between years two and three, the assets go up by 3,630, which is recognised in the form of a holding gain. But the firm still has the three machines in an identical condition at the year end as at the start, and the stock is the

same. In fact, it could well be argued that the company ought to show a loss in real terms because it has held a portfolio of assets which have only gone up by 10%, while the 'average' portfolio (for the economy in general) has been subject to 15% gains from inflation.

Each of the methods has its deficiencies. But the glaring deficiency of Exhibits 1 and 2, that they leave out the changes in specific price levels, is of the greatest importance. The replacement cost of its productive capacity is a very important number for any company, and the historic cost of acquiring that capacity is almost completely useless, even if it is restated in terms of current monetary units. The replacement cost of capacity is the logically correct basis for computing the return earned. The ratio of return (income) to current cost is a valid measure of operating success, while the ratio of return to historic or adjusted historic cost is an indeterminate mixture of operating and of holding gains which does not permit valid, clear, and useful intercorporate or inter-period comparisons. The omissions of Exhibit 3, failing to isolate the monetary gain and displaying the trend lines less clearly, are less significant problems, but should be dealt with, if possible.

What we need is a new system, or an extension of one of the three systems, which will deal with the problems we have mentioned. We would really like a system of accounting that would allow us to measure true corporate income. This would be the maximum amount of dividend that a firm could pay out and still be as well off at the end of the time period as it was at the start. In order to be as well off, the firm would have to have the productive capacity it had at the beginning of the year, even though, with technology advancing at the rate it has been, the productive capacity may be obtainable from a smaller and cheaper physical unit.

The 'Replacement Cost Adjusted' method

The method we propose is a combination of the Sandilands recommendations and the earlier proposals by the Accounting Standards Committee. This 'Replacement Cost Adjusted' method thus incorporates current purchasing power information into the replacement cost accounts shown in Exhibit 3, and the results are shown in Exhibits 4 and 5. Exhibit 5 is the final result, but it is very simply derived from Exhibit 4 by restating all the numbers in the latter into end-of-year-five currency.

The accounts in Exhibit 4 look exactly like those obtained by the replacement cost method, except for the amount of the holding gain and the inclusion of the monetary gain. The 'Replacement Cost

EXHIBIT 4

Replacement cost adjusted accounts (in current year currency)

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 4
<i>Assets</i>						
Plant	30,000	33,000	36,300	39,930	43,923	48,315
Accum. depn.	(10,000)	(11,000)	(12,100)	(13,310)	(14,641)	(16,105)
Inventory	10,000	11,000	12,100	13,310	14,641	16,105
Total	30,000	33,000	36,300	39,930	43,923	48,315
<i>Liabilities and Equity</i>						
Debt	12,000	12,000	12,000	12,000	12,000	12,000
Equity	18,000	21,000	24,300	27,930	31,923	36,315
Total	30,000	33,000	36,300	39,930	43,923	48,315
<i>Income Statement</i>						
Sales revenue		31,900	35,090	38,599	42,459	46,705
Cost of sales		(11,000)	(12,100)	(13,310)	(14,641)	(16,105)
Depreciation		(11,000)	(12,100)	(13,310)	(14,641)	(16,105)
Operating profit		9,900	10,890	11,979	13,177	14,495
Interest		(2,400)	(2,400)	(2,400)	(2,400)	(2,400)
Monetary gain		1,800	1,800	1,800	1,800	1,800
Holding gain		(1,500)	(1,650)	(1,815)	(1,997)	(2,196)
Profit		7,800	8,640	9,564	10,580	11,699
Beginning equity		20,700	24,150	27,945	32,120	36,711
Dividends		(7,500)	(8,490)	(9,579)	(10,777)	(12,095)
Ending equity	18,000	21,000	24,300	27,930	31,923	36,315

Adjusted' method recognises that two different kinds of holding operations are in progress. The company is holding both productive assets and monetary liabilities, and making gains or losses on each.

The monetary gain in Exhibit 5 is exactly the same under the RCA method as the gain shown for the general price level adjusted method in Exhibit 2. The debt is fixed in currency terms, and the equity holder therefore shows a profit during inflation.

The amount of the holding gain is quite different under RCA than under the Sandilands method, however. The reason for this difference is that the Sandilands method measures income in monetary terms and therefore recognises an upward change in an asset value as a gain. The RCA method, on the other hand, measures income in terms of units of current purchasing power. The method therefore involves the restatement of the figure at which the assets were valued at the end of the previous year into purchasing power at the end of the current year before any gain or loss can be recognised.

In the example, the assets shown in Exhibit 4 change during Year 1 from 30,000 to 33,000. Under RCA, this change is actually a two-step process. First, the original 30,000 is restated in terms of the general price index to represent 34,500 ($30,000 \times 1.15$)

in end-of-year-one currency. Thereafter, a holding gain adjustment is effected to move the restated figure to its replacement cost figure. In the present example, the holding gain is negative, and amounts in Year 1 to a loss of 1,500 ($34,500 - 33,000$).

Another method of working out the holding gain would be to note the difference between the general and specific price indices and apply that difference to the starting asset valuation, thus:

$$\text{Gain} = 30,000 (0.10 - 0.15) = -1,500$$

The only other item that needs to be explained in Exhibit 4 is the change in the valuation of the beginning equity for each year from the ending equity of its predecessor. The ending equity of Year 1 is 21,000 and this is shown as 24,150 when the beginning equity for Year 2 is listed. The explanation of this difference is that each column is stated in a currency of a different year. The 21,000 is in end-of-year-one money, while the 24,150 is in end-of-year-two money.

Let us now turn to the figures in Exhibit 5, which have all been mechanically converted to end-of-year-five currency from Exhibit 4, and analyse the story therein. The pattern is one of slow decline. The operating profit falls by 4.3% each year. The return on investment is stable at 29%, while the

EXHIBIT 5**Replacement cost adjusted accounts in year 5 currency.**

	<i>Year 0</i>	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Year 4</i>	<i>Year 5</i>	<i>Total</i>
<i>Assets</i>							
Plant	60,341	57,717	55,208	52,808	50,511	48,315	
Accum. depn.	(20,114)	(19,239)	(18,430)	(17,603)	(16,837)	(16,105)	
Inventory	20,114	19,239	18,430	17,603	16,837	16,105	
Total	60,341	57,717	55,208	52,808	50,511	48,315	
<i>Liabilities and Equity</i>							
Debt	24,136	20,988	18,251	15,870	13,800	12,000	
Equity	36,205	36,729	36,957	36,938	36,711	36,315	
Total	60,341	57,717	55,208	52,808	50,511	48,315	
<i>Income Statement</i>							
Sales revenue		55,793	53,368	51,047	48,828	46,705	255,741
Cost of sales		(19,239)	(18,403)	(17,602)	(16,837)	(16,105)	(88,186)
Depreciation		(19,239)	(18,403)	(17,603)	(16,837)	(16,105)	(88,187)
Operating profit		17,315	16,562	15,842	15,154	14,495	79,368
Interest		(4,198)	(3,650)	(3,174)	(2,760)	(2,400)	(16,182)
Monetary gain		3,148	2,737	2,381	2,070	1,800	12,136
Holding gain (loss)		(2,623)	(2,509)	(2,400)	(2,297)	(2,196)	(12,025)
Profit		13,642	13,140	12,649	12,167	11,699	63,297
Beginning equity		36,205	36,729	36,957	36,938	36,711	36,205
Dividends		(13,118)	(12,912)	(12,668)	(12,394)	(12,095)	(63,187)
Ending equity	36,205	36,729	36,957	36,938	36,711	36,315	36,315
<i>Ratios</i>							
Change in sales		—	(4.3)%	(4.3)%	(4.3)%	(4.3)%	
Change in operating profit		—	(4.3)%	(4.3)%	(4.3)%	(4.3)%	
Change in net profit		—	(3.7)%	(3.7)%	(3.8)%	(3.8)%	
Return (op. profit) on begin. investment		28.7%	28.7%	28.7%	28.7%	28.7%	
Return on equity		37.7%	35.8%	34.2%	32.9%	31.9%	
Debt/equity at year-end		57.1%	49.4%	43.0%	37.6%	33.0%	

return on equity declines from 38% to 32%. The debt/equity ratio declines in exactly the same pattern shown in the replacement cost accounts in Exhibit 3.

Comparative evaluation

We can now address the question of whether the RCA method provides sufficient additional information beyond that yielded by the Sandilands method to make its adoption worthwhile. A comparison of the ratios and trends in Exhibits 3 and 5 permits an evaluation of which method best captures the economic realities of this situation.

The first point to note is that both the Sandilands method and RCA report the same amount of operating profit in the current year, e.g. 14,495 for Year 5

in Exhibits 3 and 5. Thus, RCA does not lose or distort this crucially important contribution from the Sandilands report. The two important differences, then, lie in the calculation of performance trends and in the measurement of net profit which includes both types of holding gains and losses.

In a physical sense, the performance of our hypothetical company has been absolutely flat, yet Sandilands shows sales and profits growing at 10% each year, while RCA shows an annual decline of 4.3%. The difference is easily reconciled: costs and prices in this industry are inflating at 10% per year, while the general inflation rate is 15%. RCA restates the prior year numbers to reflect the general inflation and says that real growth for this company is negative: $(110 - 115)/115 = -4.3\%$. Neither method reports

EXHIBIT 6**Some comparative statistics**

	<i>Historic Cost</i>	<i>General Purchasing Power Adjusted Accounts</i>	<i>Sandilands</i>	<i>Replacement Cost Adjusted</i>
Annual Profit Increase	12%	-4%	12%	-4%
Return on Assets	44%	24%	33%	29%
End-of-Period Return on Equity	53%	31%	52%	32%
Final Debt/Equity Ratio	35%	32%	33%	33%
Exhibit	1	2	3	5

the physical reality of no growth, but RCA does report the economic reality that the purchasing power of each year's sales and profits are less than the prior year. Operating profit as a ratio to operating investment is also lower for RCA (29% vs. 33% for Sandilands) because the investment at the beginning of the year has been restated to reflect the end-of-year purchasing power of the capital invested.

The other dramatic difference between the two methods is shown in the calculation of return on equity: 52% in Year 5 for Sandilands vs. only 32% for RCA. Both ratios use the same denominator; the difference is in the holding gains and losses. The RCA method discloses that, in this case, the shareholders have actually suffered a purchasing power loss by having their capital invested in assets that are not increasing in value as rapidly as the general inflation. That loss was offset (almost precisely over the five years in this example) by the fact that part of the capital so invested was supplied by the debenture holders who will be repaid with depreciated currency. These two disclosures provided by the RCA method seem more informative to us than the single disclosure under Sandilands of the holding gain unadjusted for purchasing power changes. The Sandilands method completely ignores the gearing of the business, yet this can have a major effect on the shareholders' result during a period of rapid general inflation.

Continuing discomfort

We continue to have a sense of discomfort about both the Sandilands and RCA methods in terms of one critical dimension. Earlier, we defined the most

useful profit figure to be the amount that could be distributed to shareholders and still leave the company as well off at the end of the year as at the start. We used the Sandilands method to calculate dividends that could thus be paid. Yet, by the end of Year 5, the company is clearly in better condition than it was at the beginning of Year 1: the debt/equity ratio has dropped from 66.7% to 33.0%.

The reason for the change in the debt ratio is straightforward. The Sandilands method calculates a holding gain over the five years of 18,315 and states that these funds cannot be distributed to shareholders because they must be reinvested to maintain the same quantity of physical assets. While it is true that the investment is required, the entire amount of the capital need not be provided by shareholders. If 40% of the money were provided by debt, 7,326 of additional debentures could be issued, and that amount could be distributed as additional dividends to shareholders. Only if this were done, i.e. if total dividends were equal to $48,441 + 7,326 = 55,767$, could we say that the company in every respect was just as well off at the beginning as at the end.

The RCA method also fails to provide a direct calculation of profit that would meet our criterion. Using total amounts for the five years, dividends paid of 63,187 are equal to operating profit less interest expense. If the monetary gain of 12,136 were also distributed as dividends, the debt/equity ratio would be higher than its initial value. Again, the holding gain must be taken into account. Under RCA we see that the company has a holding loss of 12,025, which means, in purchasing power terms, that the company's capital has become superfluous to that extent. Thus, 40% of that amount, 4,810,

must be repaid to the lenders. The net additional dividend under the RCA method, $12,136 - 4,810 = 7,326$, can therefore be calculated in a manner analogous to the previous calculation for Sandilands.

The troublesome aspect of both calculations, of course, is that accountants have traditionally ignored the debt/equity ratio in calculating net profit. Interest expense as a cost? Yes. Monetary gains on debt to reflect changes in purchasing power? Well, yes, it can be done, and it may be acceptable. But dividing holding gains or losses into *pro rata* shares for debt and equity? Now really! Nevertheless, we continue to be concerned at the inability of any profit calculation which ignores such a step to meet the conventional criterion of well-offness.

Conclusions

We are continuing our research in the pursuit of this nagging doubt, but believe that the conclusions we draw at this point are valid.

First, adopting replacement values, as endorsed by the UK government in November 1975, is a major

step forward and vastly to be preferred to the previous recommendation of the Institutes. There can be no doubt that the resulting accounts will be more useful to both managers and shareholders than either historical cost or general price level adjusted statements.

Second, it is feasible and, we believe, desirable to take the additional step of restating replacement value accounts to reflect changes in the general purchasing power of the monetary unit. Such a step provides a better measure of economic realities in terms of:

- (1) measuring trends in performance;
- (2) reflecting the net cost of borrowed money in an inflationary economy; and,
- (3) reporting that owning physical assets does not always yield a gain in terms of an increase in general purchasing power. The cost of these additional pieces of information is the cost of educating users of financial statements to understand financial reports presented in units of constant purchasing power. The cost is not trivial, but the benefits seem worth the effort.

Indexation: A Review Article

Geoffrey Whittington

Indexation and Inflation, Bryan Carsberg, E. Victor Morgan and Michael Parkin, with contributions from members of the Manchester University Inflation Workshop. An Economists Advisory Group study, The Financial Times Ltd., 1975. 165 pp. £50.00. [EAG].

Taming the Tiger, Richard Jackman and Kurt Klappholz, The Institute of Economic Affairs, 1975. 64 pp. £1.00. [IEA].

Indexing for Inflation, Thelma Liesner and Mervyn King (eds.), The Institute for Fiscal Studies and Heinemann Educational Books, 1975. 156 pp. £6.00. [IFS].

The idea of indexation, or 'monetary correction', has a long history, dating back at least to the early nineteenth century,¹ and including in its early twentieth century advocates Irving Fisher,² but it has become a serious policy issue only as a result of the recent unprecedented high rates of inflation in Western Europe and North America. Led by Professor Friedman,³ a number of economists, particularly those of a monetarist persuasion, have advocated indexation not only as a means of dealing with the inequities and inefficiencies of inflation, but also as a means of aiding the control of inflation through monetary policy.

The three books

The three books under review all appeared within a few months of one another. The Carsberg, Morgan and Parkin volume (subsequently referred to as EAG) has a preface dated May 1975, Jackman and Klappholz (subsequently referred to as IEA) date their preface August 1975, and the Liesner and King volume (subsequently referred to as IFS) is an

account of a conference held in January 1975. There is inevitably a considerable overlap of coverage and, in one case, a significant overlap of authorship (the authors of the IEA pamphlet contribute the paper on wage indexation in the IFS volume). However, there is a sufficient degree of complementarity to make a study of all three books worthwhile. Their specific characters may be summarised as follows.

The IEA paper provides a coherent theoretical argument in favour of indexation throughout the economy. The coherence derives from the fact that there are only two joint authors and they share a common faith in the usefulness of indexation. The price of brevity and theoretical coherence is a relative lack of institutional detail and quantification.

The IFS volume, on the other hand, has a wide range of contributors, not all of whom are unequivocal advocates of indexation. It contains a greater variety of attitudes to the subject and, because it is longer than the IEA paper, covers some more detailed practical aspects including, for example, a useful survey of International Experience of Indexing⁴ and an instructive exercise showing how inflation has eroded various allowances and other money amounts embodied in UK tax legislation.⁵

The EAG volume also has a number of contributors, but, unlike the IFS group, they share a common attitude to the subject in hand, derived, presumably, from their common membership of the Manchester University Inflation Workshop. There is a significant degree of continuity and cross-referencing between the chapters and this framework provides a thorough sector-by-sector analysis of the economy. This work's unique flavour lies in its emphasis on fairly detailed quantification, helped

¹See Parkin in [EAG], p. 6.

²Irving Fisher, *The Purchasing Power of Money*, New York, 1911.

³Milton Friedman, *Monetary Correction*, Institute of Economic Affairs, 1974.

⁴By Sheila Page, pp. 97-109.

⁵By Halmer Hudson, pp. 111-135. This book also contains a very thorough paper on the economic aspects of indexing personal income taxation, by R. I. G. Allen and D. Savage, pp. 41-60.

by the fact that a majority of the contributors have an accounting background (including Professor Parkin, who is an accountant-turned-economist). For example, this is the only one of the three books under review to provide detailed numerical illustrations of the applications of indexation to financial statements⁶ or estimates of the impact of inflation on the distribution of wealth.⁷

In summary, each of these three books contains interesting and useful material aimed at a slightly different audience and they may be seen as complementary in many respects. One factor which may, on the other hand, lead them to be regarded as substitutes is their price: at £1.00 for 64 pages from IEA, £6.00 for 158 pages from IFS and £50.00 (fifty pounds) for 165 pages from EAG, for work of comparable quality, it is not difficult to select the 'best buy', or the worst.

The case for indexation

The case for indexation which emerges from reading these three books is a powerful one, but it is perhaps stronger on theoretical than on practical grounds. Even on theoretical grounds, the case has weaknesses which are readily admitted but which tend to be dismissed summarily on the ground that they apply to circumstances which the author(s) do not *believe* to occur in practice. This criticism applies particularly to the treatment of cost-push inflation: there is not a single contributor to these three volumes who is a full-blooded believer in cost-push inflation in the same way as, for example, Professor Parkin is a believer in the efficacy of controlling the economy through the money supply. It would have added greatly to the overall balance of the debate had there been a contribution from a leading proponent of the cost push inflation/incomes policy school, such as Lord Kahn.

The three main arguments in favour of indexation are:

- (i) *Control of Inflation*: in appropriate circumstances, indexation can reinforce the effect of a tight monetary policy in restraining price increases.
- (ii) *Equity*: indexation can protect those members of the community whose assets or incomes are denominated in money terms and who will therefore suffer if inflation is unanticipated at the time when the money values are determined.
- (iii) *Efficiency*: uncertainty about future rates of inflation leads to incorrect economic decisions

being made as a result of incorrect estimates of the future. Indexation can remove the consequences of future inflation (by fixing contracts in real rather than monetary terms) and so eliminate this source of uncertainty and inefficiency.

Of these three arguments, the first (control of inflation) is potentially the most important: if inflation can be controlled adequately, the problems of living with inflation (with which arguments (ii) and (iii) are concerned) will lose their importance. Indeed, the second and third arguments are sometimes used *against* indexation by those who see inflation as the fundamental evil and regard palliatives for its symptoms as being likely to postpone the application of the unpleasant remedies (such as high unemployment) for the disease.

I Control of inflation

The central argument for indexation as a means of controlling inflation is based upon the currently popular (a cynic might say 'modish') expectations theory of price and wage formation, which augments the traditional excess demand theory to take account of price expectations. The central idea of this is that wage bargains are struck in money terms, with both parties building into the agreement their current expectations of inflation during the period for which the bargain will hold (expectations about increases in the cost of living being a determinant of employees' demands and expectations about rises in selling prices being a determinant of what employers think they can afford to offer). Furthermore, it is assumed that expectations of future inflation are based upon the rates experienced in the recent past. Thus, if the rate of inflation accelerates, due to an increase in demand, expectations will typically be exceeded by the outcome, whereas when inflation rates fall the outcomes will be less than expected. Thus, the expectational element will act in such a way as to damp down the rate of change of the inflation rate. Rising inflation rates will not rise as rapidly as would otherwise be the case, because cost increases will be restrained by the payment of money wages which were agreed in the expectation of the continuation of the lower inflation rates experienced in the recent past. Excess demand combined with sluggish price and wage changes will cause labour shortages or unemployment below the 'natural rate'. Falling inflation rates, on the other hand, will not fall as rapidly as would otherwise be the case, because of the pressure of cost increases due to the payment of money wages agreed in the expectation of the continuation of the higher inflation rates experienced in the recent past. In this case, the sluggishness of price

⁶Chapter 4, by R. W. Scapens.

⁷Chapter 6, by Michael Parkin.

and wage changes will increase the level of unemployment associated with restricting demand.

It is the latter relationship which has recently attracted the attention of economists, particularly those of the monetarist school. One important objection to tight monetary policy as a means of controlling inflation is that it implies a high level of unemployment (and, on the employers' side, of liquidations and bankruptcies) which may be socially and politically unacceptable. It is argued that this problem is exacerbated by the lag in adjustment of prices to money supply which results from the expectational process described above. Indexation is seen as a possible solution to this problem. By wage bargaining in real rather than monetary terms, through the medium of indexation, it would be possible to avoid the rise in real wages, and the consequent rise in unemployment above the 'natural' level, which takes place when inflation rates fall below those incorporated in currently operative wage bargains. Equally, long-term contracts for the supply of goods and services could also be indexed to avoid similar lag effects with respect to costs other than wages.

Two important assumptions of this argument require emphasis. Firstly, it is assumed that the rate of inflation is amenable to control by restriction of the money supply, i.e. that inflation is due primarily to excess demand. If inflation is, on the other hand, of an extreme cost-push variety, demand management may be of no avail and indexation may serve to accelerate the inflationary process by strengthening the price-wage relationship. In a situation of cost-push inflation, the price level may serve as a safety valve which reconciles the excessive real claims of various sections of the community. If these claims are expressed in money terms, the price level subsequently rises to accommodate them by reducing their real value, but if they are set in *real* terms, as they would be under a full system of indexation (covering, for example, pensions and fixed interest payments, in addition to wages), and if they are unresponsive to the level of unemployment, there is no similar safety valve whereby real claims in excess of the real output of the economy can be reconciled (apart from the essentially short-term measure of borrowing from overseas). The remedy appropriate to such a situation is to reconcile the conflicting claims by means of an incomes policy or similar administrative device.

The whole idea of cost-push inflation receives fairly short shrift from the authors of the books under review, in particular from Parkin (in EAG) and Jackman and Klappholz (IEA and IFS). There are equally distinguished economists who accept the

idea of cost-push inflation⁸ and it is unfortunate that their views did not find full expression here. In fact, the experience of the past two years (ending March 1976) does not suggest, on a very superficial inspection, that the cost-push view is wrong. The threshold agreements did not appear notably to ameliorate wage claims, and the recent incomes policy has been associated with a declining rate of wage inflation, although a monetarist could point to the fact that both of these observations are also consistent with the monetary policies pursued during the period.

The second important assumption of the argument for indexation as a means of controlling inflation is that the government not only has effective monetary controls to hand but also uses them. Even if we accept the entire monetarist case for indexation, we must recognise that the use of indexation, by strengthening the responsiveness of the price level to the level of demand, will make a worsening situation worse just as it makes an improving situation better. In the situation in which inflation rates are rising, (due, in the monetarist view, to excess demand arising from lax monetary and fiscal policies) indexation would remove the dampening effect of the lag in wage and other cost increases due to expectations falling short of actual inflation levels. All of the authors who touch upon this subject seem readily to concede this potential deficiency of indexation. In view of the fact that they readily concede also that the government has made a number of serious errors in the past⁹ in its management of the economy, it is perhaps surprising that they do not lay more stress on the risks inherent in indexation.

Finally, there is some disagreement amongst the various authors as to the appropriate price index to use if the control of inflation is to be a major objective of indexation. Various contributors to the IFS and IEA volumes (particularly Flemming and Jackman and Klappholz) advocate the use of the GDP deflator (an index of 'total home costs') rather than the retail price index, on the ground that the former, unlike the latter, is unaffected by changes in indirect taxes or import prices. It is argued¹⁰ that indexation

⁸Henry Phelps Brown, 'A Non-Monetarist View of the Pay Explosion', *The Three Banks Review*, March 1975, 3 pp.-14; Sir John Hicks, 'What is Wrong with Monetarism', *Lloyds Bank Review*, October 1975, pp. 1-13; Richard Kahn, 'Monetarism and Incomes Policy', *The Banker*, October 1975, pp. 1167-1170. I am grateful to Miles Fleming for references to a wide range of literature in this field and for very helpful discussions of the monetarist and anti-monetarist views.

⁹For example Parkin, in EAG, pp. 155-156.

¹⁰For example Jackman and Klappholz in IEA, pp. 46-49.

on the retail price index would be inflationary insofar as it led to the transmission of higher import prices into domestic wages and costs. Use of the retail index would also eliminate the (demand) deflationary effect of indirect taxes by causing them to be passed on by the consumer in the form of higher wages. Furthermore, the use of the retail price index would tempt the government to bias its policies towards restraining the prices of the limited range of goods included in that index.

Parkin (the EAG commentator on this topic¹¹) rejects the first two of these arguments. He claims that the problem of importing inflation through the passing on of rising import prices would not arise under a régime of flexible exchange rates: he quotes an extreme example where the rise in world prices is fully absorbed by the exchange rate, so that import prices do not rise in terms of home currency. With regard to indirect taxation, he argues that indexation does not fix real prices or wages permanently: they are subject to renegotiation at the end of the contract period. Thus, at the next wage settlement, there will be no guarantee that indirect tax increases will be compensated for in the real bargain, despite the temporary compensation derived from indexation on the retail price index. This seems to be a somewhat extreme posture: if the 'invisible hand' of the market is as powerful as Professor Parkin appears to believe, one is tempted to suggest that it should not require the assistance of indexation to bring about an appropriate equilibrium state. Indexation on the retail price index clearly makes the market work harder to achieve such a state, e.g. by requiring it to remove indirect tax increases which have been indexed into wage rates. The reviewer therefore favours the majority view, that the GDP deflator is the appropriate index, if the object of indexation is to facilitate the control of inflation.

One final piece of evidence relating to the effect of indexation on the control of inflation might be overseas experience. Unfortunately, the overseas experience of indexation (as described by Sheila Page in IFS) has been incomplete and indecisive. There are three main reasons for this. Firstly, no country has adopted a comprehensive, economy-wide policy of indexation: the nearest to this situation has occurred in Brazil, where the entire national debt is indexed. Secondly, there have been regular shifts in the extent and form of indexation, which must inevitably have been disruptive to a policy which is intended to introduce greater certainty into economic

decisions. Thirdly, indexation has tended to be introduced at a time of crisis, and, in particular, of extreme inflation (as in various South American countries), and it is very difficult to isolate the effects of indexation in such unstable conditions. Perhaps it could be claimed that the very fact that the evidence is indecisive suggests that the more apocalyptic predictions of the consequences of indexation are unlikely to be fulfilled, but it remains the case that the introduction of comprehensive indexation in the UK would be an economic experiment without a truly comparable precedent.

II Equity

Equity is usually the main criterion upon which inflation is condemned, and indexation is potentially a powerful tool for dealing with the inequities which arise out of inflation. These inequities arise from the arbitrary devaluation of wealth and income which are denominated in money terms. Both the EAG and IFS volumes contain useful quantitative estimates of the arbitrary impact of the recent UK inflation.

With regard to the impact of inflation on the distribution of wealth, the EAG volume contains a fascinating quantitative exercise by Parkin¹² which demonstrates clearly that the government sector, as the major borrower (through the national debt), is the main beneficiary of the recent inflation in the UK. The real return on government debt was negative during 1974 and the return on National Savings was particularly bad. Inflation also had redistributive effects within sectors, e.g. geared companies gained relative to ungeared companies, and private individuals with mortgages gained at the expense of those who had money deposited with building societies. These effects are more difficult to quantify, but Parkin's comparison of three representative members of the personal sector suggests that wealthier individuals have more inflation-proof assets than the less wealthy, so the impact of inflation is anti-egalitarian.

With regard to the impact of inflation on the distribution of income, the government is again the main beneficiary through the well-known phenomenon of fiscal drag: the increase in taxation caused, in the personal sector, by people being carried by inflation to levels of money income at which their marginal tax rates are higher, and, in the company sector, by the corporation tax becoming partly a capital levy through the failure to allow replacement cost of all assets for tax purposes.¹³ The capital

¹²EAG, pp. 73-84.

¹³Estimates of the effect of fiscal drag are provided by Allen and Savage in IFS, pp. 42-48.

¹¹EAG, pp. 6-7.

allowance system combined with the recent stock appreciation relief has alleviated the effect of fiscal drag on the corporate sector, but there is clearly a case for 'bracket indexation' to relieve the impact of progressive rates of personal tax, and indexation of capital values in the case of capital gains tax. Apart from fiscal drag, inflation which is not anticipated injures members of the community whose income is fixed in money terms over long periods, such as pensioners, to the benefit of those who have contracts to provide such income.

Indexation is potentially a powerful instrument for correcting these arbitrary changes in the distribution of wealth and income. The most important problem in its way is a very practical one: the government is the main beneficiary from un-indexed contracts in periods of inflation, and the government would have to be the prime mover in the widespread introduction of indexation. The consequence of indexation would be that the government's deflationary measures, such as raising the level of taxes, would be made explicitly rather than occurring under the cloak of a money illusion. The government will be reluctant to do this because explicit tax increases will be unpopular. Equally, the indexation of the national debt would make the government's task harder: explicit negative real interest rates might be unacceptable (e.g. in the context of national savings, although zero interest rates seem to be acceptable under the current index-linked SAYE scheme) and the provision of a positive real return could add greatly to the cost of servicing the National Debt. Apart from these purely practical considerations it could also be argued, at least in the context of taxation, that decisions taken explicitly (under an indexed régime) are not *necessarily* better than decisions taken by default (fiscal drag): this is another instance of the supporters of indexation, many of whom seem to doubt the economic wisdom of past governments, combining their scepticism with a faith in the government's ability to intervene wisely in the economy once the consequences of such intervention are clarified by indexation.

The importance of the government taking the lead if indexation is to be widespread is demonstrated effectively by several of the authors. In order for individuals to enter contracts to pay indexed sums, they will need confidence that their revenue will expand at a sufficient rate to cover such indexed payments. For example, if pension funds are to offer indexed pensions, they must have the security of an inflation-proof investment medium.¹⁴ The

recent fall from grace of equities suggests that the government is the only possible source of such a security. In the case of firms offering indexed wage contracts, indexation implies that the government will relax price controls to allow all firms to pass on indexed wage increases, although this will not guarantee that the product market will bear such increases.

Apart from the political problem of inducing the government to take the initiative, and lingering doubts about whether explicit decisions are necessarily better than those taken by default, the case on equity grounds for indexation seems fairly strong. Of course, not everyone would gain in the process: the effect of indexation would be redistributive. For example, taxation would be at least as large in real terms as in an unindexed situation, and would be larger to the extent that the real cost of government borrowing rose. However, there is at least a possibility that the real burden would be spread more fairly than would be the case if its allocation were left to the effect of chance fluctuations in the inflation rate. The two forms of asset which would not be indexed, money¹⁵ and equities,¹⁶ would become unattractive, in inflationary times, relative to the wide range of indexed assets. Thus, the government would have to control the money supply stringently (to avoid a flight from money holdings) and the cost of equity capital would probably rise.

III Efficiency

This is probably the least contentious argument for indexation. Inflation generates uncertainty, and indexation, by fixing contracts in real terms, could alleviate that uncertainty and, insofar as people prefer certainty to uncertainty, could potentially make everybody better off. Apart from these psychic benefits of removing the effects of inflation, there would be more tangible benefits from the elimination of wrong economic decisions resulting from wrong (and inconsistent as between individuals) guesses about the future course of inflation. Finally, as Fane points out,¹⁷ even if inflation is correctly anticipated, incorporating it into contracts can be impeded by institutional conventions, e.g. if anticipated inflation

¹⁵Probably including bank current accounts, although even these could, in theory, be indexed, see Zannis Res, in EAG, pp. 97-105, where it is demonstrated that indexation of bank accounts would also require indexation of government securities.

¹⁶The effect of indexation on equities is discussed by E. Victor Morgan in EAG, pp. 132-134.

¹⁷IFS, pp. 2-3. Mortgages are discussed in detail by Whitley, IFS, pp. 77-91, and by Gray, EAG, pp. 107-121.

¹⁴E. Victor Morgan in EAG pp. 135-140 provides a concise account of the problems of life assurance and pension funds.

is incorporated into the interest rate, this can lead to a 'front-loading' of the real burden of debt, which can be particularly disadvantageous to new borrowers on the housing mortgage market.¹⁸

Even the efficiency argument is not impeccable. It has already been pointed out that returns to equity shares would not be indexed (their essentially residual nature precludes this), and the risk of equity holders might be increased by the burden of indexed wage and debt servicing costs. Equally, holders of cash balances would still be at risk, especially as indexation would increase the potential rate of change in the inflation rate. However, it could at least be argued that holders of equities or cash under a régime of indexation would have the alternative of certainty with respect to inflation (by investing in indexed securities) and would retain these assets in their portfolios because their prospective returns compensated for the associated risk.

Indexation and the accountant

Little has been said so far which is of direct relevance to the accountant. This is less surprising when it is remembered that equity holdings would not be indexed, and shareholders are usually regarded as the most important users of published accounts. However, it would presumably be useful for equity holders to judge the performance of their companies by some price-indexed standard of comparison. Furthermore, the issue of indexed bonds by companies would have a direct effect on financial reports (such debt being constant in real rather than monetary terms) and the indexation of the corporation tax base might also affect financial reporting (although, because of the capital allowance system, taxable profit has typically differed from reported profit for many years past).

The appropriate form of company accounts under indexation is thoroughly discussed by Scapens.¹⁹ He sensibly points out that some form of CPP adjustment is the logical method of indexing accounts, but that

inflation also highlights (although it does not create) the superiority of some form of current value over the traditional historical cost valuation basis of accounts. He therefore supports something similar to the CCAB proposals which were made in response to the Sandilands Report, i.e. a current value (probably replacement cost) basis for non-monetary assets, with all values expressed in units of constant pounds. It is the latter adjustment (CPP) which is true indexation, dealing with the pure inflation problem of money declining in value. The reviewer is sympathetic to this point of view, but, as readers of *Accounting and Business Research* will be aware, volumes have been and will be written on this controversial subject.²⁰

Concluding comments

The reviewer's main conclusion on indexation is that it is not a panacea either for economic stability or for producing a more equitable income distribution under conditions of inflation. Indexation *could* be useful in both of these directions, but the benefits would depend a great deal on the government pursuing appropriate monetary and fiscal policies. The stabilisation benefits would also depend upon indexation being widespread in the economy and this, in turn, would require a strong lead from the government. Since the government is the principal beneficiary from inflation without indexation, it seems unlikely that it will take the initiative. Nevertheless, some equity and efficiency benefits might accrue from more limited indexation, e.g. if it were introduced into the measurement of the tax base. This is probably the most which can be hoped for in practice. However, the issues involved are too complex for this statement to be more than a simplified subjective impression. The interested reader is recommended to turn for fuller discussion to such of the books under review as his purse and his energy can afford, but he should bear in mind that they tend to stress the benefits rather than the possible costs.

¹⁸This argument makes the realistic assumption that the capital market facing such individuals is imperfect, i.e., they are unable to contract for a constant annual real burden.

¹⁹EAG, pp. 45-55.

²⁰Merrett, in IFS, pp. 61-76, titles his paper, 'Indexing Company Accounts' but concentrates almost entirely on the problem of valuing specific assets, to the exclusion of the true concern of indexation, which is with fluctuations in the value of the unit of account, money.

Holding Gains on Long-Term Liabilities: A Comment

D. A. Egginton and R. C. Morris

In this journal John Grinyer recently raised a new argument in a long-standing controversy.¹ He advanced the view that the usual method of calculating general purchasing power (or CPP) gains on long-term liabilities is 'only fully valid if the same compound rate of inflation applies in all periods, from the time of borrowing to that of eventual repayment of the loan'.² His major conclusion was that in order to disclose real interest costs it would be desirable to prepare external accounting reports which 'build management's expectations concerning future inflation into the calculations'.³

The purposes of this comment are:

1. To demonstrate that whatever may be the necessary conditions for the 'full validity' of the usual method of calculating CPP gains on long-term liabilities, a constant compound rate of annual inflation is not one of them.
2. To suggest that if attempts are to be made to improve existing accounting treatments of interest costs, it would be more fruitful to direct attention to the problems of disclosing current market interest costs (and consequent financing gains or losses) than to attempt a mixture of past-contracted interest costs and management expectations in profit calculation.

Measuring ex post interest costs under CPP accounting

Grinyer's arguments concerning the validity of the usual method of calculating holding gains on long-term liabilities are based on a certainty model in

which his equation (8) yielded the 'repayment' (of principal) during period t , expressed in period 0 prices:

$$R = \sum_{j=t}^n \frac{c_j}{(1+r)^{j+1-t} \left[\prod_{m=1}^j (1+f_m) \right]} \quad (1)$$

$$- \sum_{j=t+1}^n \frac{c_j}{(1+r)^{j-t} \left[\prod_{m=1}^j (1+f_m) \right]}$$

where R is the repayment of real principal included in the money interest payment
 r is the 'real' interest rate
 c_j is the cash flow associated with the loan in period j
 f_m is the compound rate of annual inflation in year m
 $\prod_{m=1}^j (1+f_m)$ means multiply together the terms $(1+f_m)$ for years $m=1$ to $m=j$.

With minor amendments to incorporate *ex post* inflation and certain implicit assumptions made *ex ante* about inflation, this equation can be adapted to provide a hindsight explanation of the conventional CPP treatment over a loan's life – in which Grinyer's 'repayment of principal', R , equates with the familiar monetary holding gain on long-term liabilities.

In the above equation f is defined as the rate of annual inflation – which under certainty would be identical *ex ante* and *ex post*. When the certainty assumption regarding the rate of inflation is relaxed it is necessary to distinguish between:

¹J. R. Grinyer, 'Holding Gains on Long-Term Liabilities: A Rigorous Analysis', *Accounting and Business Research*, No. 20 Autumn 1975, pp. 292-297.

²Grinyer, *op. cit.*, p. 295.

³Grinyer, *op. cit.*, p. 295.

F_m , the *ex post* rate of annual inflation in year m ; and f_m , the *ex ante* rate of annual inflation in year m .

With the incorporation of *ex post* inflation only up to the time of each calculation of R , and *ex ante* inflation thereafter, equation 1 (Grinyer's equation (8)) becomes:

$$R = \sum_{j=t}^n \frac{c_j}{(1+r)^{j+1-t} \left[\prod_{m=0}^{t-1} (1+F_m) \right] \left[\prod_{m=t}^j (1+f_m) \right]} \quad (2)$$

$$- \sum_{j=t+1}^n \frac{c_j}{(1+r)^{j-t} \left[\prod_{m=1}^t (1+F_m) \right] \left[\prod_{m=t+1}^j (1+f_m) \right]}$$

The term r has been left as a constant in this formulation to facilitate comparison with Grinyer's example, but that assumption will be examined later.

For hindsight explanation purposes R can be converted to period t prices by multiplying by $\left[\prod_{m=1}^t (1+F_m) \right]$.

The reformulated R can be used to reconcile the conventional CPP holding gains with the approach adopted in the figure example in Grinyer's Table 2 (where values for R were not explicitly shown, but were in fact the differences between deflated interest payments and 'real interest cost' - i.e. in year 0 £8, £125-£50 = £75 in year 1, £114-£46 = £68 in year 2, etc.).

That example assumed a loan of £1,000 repayable at the end of four years, a money interest rate of 15% per annum, and inflation rates of 20%, 10%, 5% and zero in years 1, 2, 3 and 4 respectively. With the benefit of hindsight the 'real' interest cost can, as before, be calculated at 5% per annum over the entire life of the loan, derived by discounting the real cash flows (at year 0 prices) to a zero value.

The fact that the hindsight 'real' interest rate over the whole life of the loan 'averages' 5% per annum does not mean that the year-by-year *ex post* interest must necessarily be constant at 5%. Grinyer's implicit assumption that the two aspects are identical is central to his results, although at one point he acknowledges that 'real rates of interest do change over time'.⁴ The year-by-year rate could more plausibly be derived as a residual from the contractual money interest rate and the actual *ex post*

inflation rate in each period - which, it will be demonstrated, is effectively what the CPP method does. Whether any rate which ignores current market costs is entirely informative in its reflection of 'reality' is a question which will be deferred.

The constant 'real' interest rate assumption is analogous to that adopted for internal rate depreciation. It is possible to engineer a constant annual rate of return for a project equal to its annual yield if internal rate depreciation is charged. Although this is easy enough to achieve *ex ante*, and various writers over the last 20 years have canvassed the use of this depreciation method,⁵ the rationale of such an approach to income measurement has more than once been questioned.⁶

Continuing the examination of CPP holding gains on the basis of Grinyer's Table 2, 5% per annum is accepted as the hindsight 'real' interest rate over the entire life of the loan, but *not* as the year-by-year *ex post* rate. Purely for the sake of exposition 5% will also be adopted as the constant *ex ante* 'real' rate of interest; with a constant money interest rate of 15% that would imply a constant *ex ante* inflation rate of 9.52% per annum, derived from:

$$f = \frac{(1+i)}{(1+r)} - 1 \quad (3)$$

where i is the constant money interest rate (contracted and therefore certain) and r is the constant *ex ante* 'real' interest rate.

The *ex ante* 'real' interest rate and the *ex ante* inflation rate need not necessarily be constant, but the assumption simplifies comparison. Given that the *ex post* inflation rates were 20%, 10%, 5% and zero in years 1, 2, 3 and 4 respectively, the results can be calculated year-by-year for R applying the reformulated equation. They are shown in the accompanying table, where column (g) indicates the hindsight holding gain each year in terms of year 0 prices. This

⁵E. O. Edwards, 'Depreciation and the Maintenance of Real Capital' in J. L. Meij (ed.) *Depreciation and Replacement Policy*, North Holland Publishing, Amsterdam, 1961; H. R. Anton, 'Depreciation, Cost Allocation and Investment Decisions', *Accounting Research* Vol. 7 (1956), pp. 117-134; and H. Bierman, 'Depreciable Assets - Timing of Expense Recognition', *Accounting Review* Vol. 36, (1961), pp. 613-618.

⁶The most obvious challenge has come from Vatter in his criticisms of Ezra Solomon's espousal of the IRR model: W. J. Vatter, 'Income Models, Book Yield, and the Rate of Return', *Accounting Review* Vol. 41 (1966), pp. 681-698. Solomon has written several articles in favour of the IRR model, but the one examined by Vatter appeared in *Research in Accounting Measurement*, eds. R. K. Jaedicke, Y. Ijiri, and O. Nielsen: American Accounting Association, Evanston, Ill., 1966; E. Solomon, 'Return on Investment: the Relation of Book Yield to True Yield', pp. 232-244.

⁴Grinyer, *op. cit.*, p. 292.

Hindsight explanation of monetary holding gains

Years		Cash Flows				Real principal out- standing at year 0 prices (incorporating at each date ex post inflation and implied ex ante inflation)		Hindsight holding gain, R (corresponding to Grinyer's 'repayment of principal')			
		Money terms		Year end prices (= CPP monetary holding gains year-by-year)							
		Price index	Principal	Interest payments	Year 0 prices	Year 0 prices	Year end prices (= CPP monetary holding gains year-by-year)	Net interest cost in CPP figures, year- by-year (column (d), less (h))	Interest pay- ments	Monetary holding gains	Net interest cost
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
0	100	+1,000		+1,000	1,000						
1	120		150	-125	833	167	200	-50	150	200	-50
2	132		150	-114	758	76	100	+50	150	100	+50
3	138.6		150	-108	721	36	50	+100	150	50	+100
4	138.6	-1,000	150	-830	[721] *	0	0	+150	150	0	+150

*Before repayment of principal.

Hindsight average 'real interest cost' is 5% per annum — found by discounting column (e) to zero value.

corresponds to Grinyer's 'repayment of principal' and is derived by adopting actual values for F in the years up to the time of the gain, and thereafter 9.52 per cent per annum for the implicit *ex ante* inflation rate f . Column (h) converts these gains to year end prices – to give precisely the same gains as the conventional CPP method.

It can now be shown that, in fact, the explicit incorporation of r and f (either *ex ante* or *ex post*) into the discounting process in our equation 2 is redundant, because in any single period:

$$(1 + r_m)(1 + f_m) = (1 + i)$$

The formula for R can consequently be simplified to:

$$R = \sum_{j=t}^n \frac{c_j}{(1+i)^{j+1-t} \left[\pi \sum_{m=0}^{t-1} (1+F_m) \right]} - \sum_{j=t+1}^n \frac{c_j}{(1+i)^{j-t} \left[\pi \sum_{m=1}^t (1+F_m) \right]} \quad (4)$$

For example, the year 3 value for R in column (g) could have been calculated:

$$R = \frac{150}{(1.15)(1.32)} + \frac{1,150}{(1.15)^2(1.32)} - \frac{1,150}{(1.15)(1.386)} = 36$$

Thus the conventional calculation of the monetary holding gain does not incorporate an implicit assumption of the division between 'real' interest and the *ex ante* rate of annual inflation *nor is there any need for it to do so*. It produces a solution which is equivalent to discounting at the money rate of interest i , which may be divided in an infinite variety of ways between r_m and f_m . By calculating the impact of inflation as it occurs, the method can accommodate any actual rate of inflation.

One qualification needs to be made about the money rate of interest i , which is that it represents the contracted effective rate of interest and not merely the coupon rate. Frequently loans are issued with coupon rates below market yields, compensation being offered in the form of a discount on issue or premium on redemption. The effective rate of interest at issue can be found by calculating the internal rate of return for the (certain) stream of cash flows associated with the loan. It is not usually the effective rate that accountants charge in determining conventional

profit, but the coupon rate (plus appropriate amortisation of discounts). Thus the conventional calculation of monetary holding gains does not entirely satisfy equation 4.⁷

Disclosure and the 'real' rate of interest

If the above discussion has revealed anything, it is that there is more than one way of defining the 'real' rate of interest. Which definition is to be preferred? Is it the *ex ante* rate of 5 per cent, which was management's *ex ante* annual average rate? Or is it the hindsight 5 per cent average rate, which would have to wait for calculation until the redemption of the loan? Should it be the difference between the contractual interest rate and the actual rate of inflation in each year? Acceptance of the last possibility would, it has been demonstrated, avoid the need to adopt any of the disclosure alternatives proposed by Grinyer – although there may be some appeal in his first alternative of dispensing with the disclosure of conventional monetary holding gains, on the grounds that it does not add information which diligent users of published accounts could not deduce for themselves with the aid of readily available indices.

However, if monetary holding gains are to be disclosed in published accounts, there is little attraction in Grinyer's preferred solution of charging management's estimated 'real' rate of interest in calculating profits. That would involve the selective inclusion of one element of management's expectations regarding inflation and would provide unnecessary scope for creative accounting. It seems incongruous that such a proposal should be espoused in the context of a 'concept of a profit figure derived by matching historical costs . . . and revenue . . .';⁸ those who operate the historic cost system for reporting purposes generally justify it by its avoidance (as far as possible) of subjective valuations in accounts. Although there is a good case for providing more information on management expectations in financial reports, the needs of users would be better served by providing such information in a coherent and separate statement than by injecting one new subjective aspect into historically based accounts.

⁷It would be necessary to amortise the discount on an issue of debentures by dividing the discount by the annuity factor for the life of the loan, applying the effective rate. Where a premium is payable on redemption the premium would have to be divided by the sinking fund factor for the life of the loan, similarly applying the effective rate. In both cases the annual equivalent would have to be treated as a charge against revenues, not as an appropriation of profits.

⁸Grinyer, *op. cit.*, p. 292.

Midway between historic cost accounting figures and expectations there is the new orthodoxy that annual accounts should reflect the current market environment in which firms operate. The view that the current cost of assets consumed is relevant to income measurement is incomplete unless it extends to the current cost of finance provided. In this context interest cost should reflect the market place and recognise prevailing market interest rates.

Where Edwards and Bell's 'Real Business Profit'⁹ is adopted (which, at the time of writing, appears to be what the CCAB favours) it would be appropriate to charge the current market interest cost against revenues in addition to CPP type adjustments for debt. The definition of the 'real' interest rate would then become the difference between the prevailing market interest rate and the actual inflation rate in a period; even so, the observed interest rate on long-term debt in any period may incorporate expectations of inflation in future periods, so that the calculation may still not satisfy a strict view of the 'real' interest cost for the current period. However, it might, as we have argued elsewhere, be helpful to provide in

published accounts a complete analysis of the effects of financing, which would include monetary holding gains, current market interest costs, financing gains or losses, and changes in the market value of debt.¹⁰ It must be recognised that there are substantial problems to be overcome in such reporting.¹¹ When loans have a market quotation it is possible to assess a current market rate, but differences in risks, maturity dates, etc. cause difficulties in extending market yields to non-quoted long-term debt.¹² Convertible loan stocks are also inconvenient in their characteristics. The approach of incorporating market costs and gains on debt is nevertheless potentially informative for users of accounts and deserves more investigation than it has so far received.

¹⁰D. A. Egginton and R. C. Morris, 'Borrowing Costs, Price Level Changes and ED8', *Accountant* Vol. 169, (1973), pp. 463-466.

¹¹These problems are of a different order from the relatively minor point raised in the Sandilands Report that the full amount of long-term debt can become repayable if terms of the loan are breached. (*Report of the Inflation Accounting Committee*, Cmnd. 6225, HMSO London, 1975: paragraph 593.) That point could be met by way of note in the usual tradition of contingent liabilities.

¹²R. C. Dockweiler, 'The Practicability of Developing Multiple Financial Statements: A Case Study', *Accounting Review* Vol. 44 (1969), pp. 729-742.

⁹E. O. Edwards and P. W. Bell, *The Theory and Measurement of Business Income*, University of California Press, Berkeley, Calif., 1961.

Auditor's Report — Society's Expectations v. Realities*

M. Knoll

The auditor's report, by which the auditor expresses his opinion on the financial statements, is, as we all know, designed to impart credibility to the statements which have been prepared by management for the use of various third parties (including shareholders), and constitutes a means of communication between the auditor and the users of the statements.

Examination of the information value of the auditor's report therefore involves examination of those elements whose presence is essential to every effective means of communication, namely:

- (a) What are the information needs of the users?
- (b) What other information, apart from that contained in the auditor's report, is available to users?
- (c) How far is the information communicated by the auditor's report intelligible to users?
- (d) How far is the information contained in the auditor's report relevant for the purpose of decision-making by users?

A particular difficulty with respect to the function of the auditor's report as a means of communication is posed by the fact that the financial statements covered by the auditor's report are themselves a means of communication between management and external users, so that such statements too must contain all those elements which are essential for effective communication. Moreover, both these means of communication are designed for the same users, and are addressed to them in one and the same booklet — the annual report — without it being always clear to them which part has been prepared by management and which part by the auditors. As a result, it is quite difficult to draw a clear line of demarcation between users' expectations from the financial statements on the one hand and their expectations from the auditor's report on the other hand.

However, in this paper we propose to confine ourselves, as far as possible, to discussion of the

auditor's report only, by which we mean the short-form report (as distinct from the long-form report). We shall generally also limit the discussion to business corporations, more particularly to companies whose securities are traded on the Stock Exchange, without reference to insurance companies, banks, provident funds and the like.

Our object is to examine to what extent the work done by the auditor in performance of the attest function meets the needs and expectations of society; what are the causes of failure, if such be the case, to meet those needs and expectations, and how can the gap between expectations and reality be narrowed.

The principal topics to be discussed are:

- (1) Objectives of the audit and the auditor's function.
- (2) Expansion of scope of the attest function beyond audit of the annual financial statements and beyond the conventional audit objectives.
- (3) Means of communication between the auditor and society and particularly the form of the auditor's report.

We therefore propose to examine what is found in reality as against what is desirable, and to ascertain what progress has been made in the areas covered by those topics, and to do so from the viewpoint of users as well as from the viewpoint of the auditor.

While most of the problems referred to are probably common to many countries the world over, we shall deal mainly with the state of things in Israel. By way of background information, we shall first furnish a brief review of the accounting profession in Israel and the auditor's report.

The accounting profession and the auditor's report in Israel

(1) *Development of the profession in Israel*

The initial stage in the creation of the profession in Palestine began with the enactment, by the British mandatory authorities, of the Companies Ordinance and the Cooperative Societies Ordinance in the years 1919–22. These Ordinances provided, *inter alia*,

*A paper presented at the 2nd Jerusalem Conference on Accountancy, 1974.

for the audit of the annual accounts of companies and cooperative societies.

The first society of professional accountants was established in the country in 1931, a society which ultimately developed into The Institute of Certified Public Accountants in Israel. The number of members of the Institute currently approximates 1,600 as against 100 in 1950. About two-thirds of the membership are practising accountants, being either self-employed or employed by firms of accountants.

The Institute has made notable contributions to the development and growth of the accounting profession through the publication of pronouncements on accounting principles and rules, financial reporting, auditing standards and procedures and ethical conduct. The requirements for training, examinations, clerkship and licensing are of a high order.

The Institute has also cooperated with various Government authorities, controlling agencies and public bodies in prescribing accounting and auditing rules and procedures for execution of their respective functions.

As a result, the profession is held in high esteem by Government authorities, public agencies and the general public.

The main features characterising the development of the profession in Israel are the following:

- (1) The profession was not content with the formal requirements prescribed by law, but in practice went far beyond these requirements.
- (2) The profession was successfully active in promoting and bringing about the codification of the requirements as to financial reporting, the status of the auditor, the auditor's report and audit standards.
- (3) The profession has, with the tacit consent of the legislator, retained the authority to prescribe accounting principles and rules and auditing procedures.
- (4) Accounting principles and reporting rules for specific areas and topics have been determined by the Institute in coordination with controlling agencies and public bodies, such as the Controller of Banks, the Controller of Insurance, the Controller of Provident Funds, Government Corporations Authority and others.
- (5) Although accounting principles and auditing standards and procedures adopted in Israel have been greatly influenced by British accounting concepts, developments are progressively trending in the direction of US concepts, probably also as a result of the extensive investments made in Israel by US corporations and the need to furnish these investors with reports in conformity with account-

ing principles and auditing procedures prevailing in the USA.

(6) There are many areas for which no accounting principles and rules have as yet been laid down by the Institute. In these instances, application is made of principles prevailing in, or suggested in professional literature of other countries, mainly the USA, or principles which have become naturalised in Israel as a result of prevailing circumstances.

This trend of development may be illustrated by the following examples:

(a) The Companies Ordinance still in effect in Israel is based on the British Companies Act of 1929. This Act prescribed minimal requirements for financial reporting and audit of public and private companies. (This Act was substantially amended in the years 1948 and 1967.) It is to be noted, however, that financial reporting and audit in Israel extended in reality beyond the formal requirements of the Companies Ordinance. In 1968 the Securities Law was enacted, regulating the accounts of companies whose securities are traded on the Stock Exchange, and in 1969 regulations¹ were made under that Law as to preparation of financial statements by such companies, regulations which for the most part give legal effect to the best practices of the profession in Israel. These regulations deal with the form of financial reporting and with the requirements of adequate disclosure; they do not lay down accounting principles, and only provide that the financial statements are to be prepared in conformity with accepted accounting principles and reporting rules.

(b) As early as 1941, the Institute prescribed rules governing professional conduct, rules which were amended from time to time. In 1965, the Institute published a pronouncement on Auditing Standards, and in 1968 an Opinion on Qualifications and Disclaimers in the Auditor's Report. A Uniform Text of the Auditor's Report was adopted in 1970. In addition, the Institute has also been active in securing legal recognition for these pronouncements. The legal status of the profession and the rules as to ethical conduct are regulated in Israel by the Auditors Law, 1955 and regulations made thereunder. This Law also deals with examination requirements, apprenticeship and the qualifications needed for obtaining a licence to practise as auditor (examinations are conducted by the Auditors' Council, a body distinct from the Institute and

¹Securities (Preparation of Financial Statements) Regulations, 1969.

administered by the Ministry of Justice).

In 1973, the Auditors (Mode of Performance) Regulations were published prescribing, among other matters, the main auditing standards, contents of auditors' report, and the circumstances in which an auditor is required to qualify his opinion, disclaim an opinion or render an adverse opinion.

(2) *Independence*

Independence, as we are all aware, constitutes a dominant element in public accountancy. Although independence is essentially a state of mind, it is to be viewed also in light of the legal and professional requirements and prevailing practice, always remembering the well-known rule that independence must not only be maintained but also be seen to be maintained.

(a) *Legal and professional requirements*

Legal requirements as to independence are to be found in the Companies Ordinance, such as the requirement that a director or officer of the company may not serve as auditor of the company and, except in the case of a private company, a partner or employee of an officer of the company is not qualified to act as auditor. This condition has been expanded by the Auditors (Mode of Performance) Regulations, 1973, to provide specifically that an auditor shall, directly and indirectly, be independent of the audited body, and that an auditor shall not serve as an employee of the company, its parent, subsidiary or affiliate or of a person being an 'interested party'. (As to 'interested party', see below.)

Requirements as to independence are also incorporated in the rules as to professional conduct and the auditing standards prescribed by the Institute. Neither the terms of the law nor the pronouncements published by the Institute state expressly that the auditor may not hold any economic interest, such as a shareholding interest, in the auditee. The Securities Law only provides (Section 37) for the duty to file notice as to the securities of the reporting entity held by the auditor. Likewise, neither the law nor the pronouncements of the Institute lay down explicit rules as to any special economic ties (receipt of loan from auditee) or personal ties (family relationship or employing family members) that may be existing between auditor and auditee. A special committee of the Institute is currently formulating recommendations on these topics.

There are as yet no judicial rulings in Israel on the subject of independence. It may be stated,

however, that, generally speaking, independence as conceived by the profession in Israel does not differ in any material respect from independence as conceived in the USA or Great Britain.

(b) *Appointment and replacement of auditor*

Another aspect of independence concerns the manner of appointment and replacement of the auditor and the fixing of his remuneration. Unlike the position in the USA, appointment of an auditor in Israel is made by the general meeting of shareholders (except for the first appointment made by the directors with effect until the first general meeting). The appointment of auditors is valid until the next general meeting and must be renewed every year. Replacement of an auditor can be made only by the general meeting of shareholders, at the instance of a shareholder. Notice of intention to propose replacement of the auditor must be sent before the date of the general meeting to the shareholders of the company as also to the auditor concerned. The law does not provide whether the auditor whom it is proposed to replace is entitled to appear at the general meeting and to state his case. The Institute pronouncements as to professional conduct and the Regulations concerning Conduct Derogatory to the Profession also provide that an auditor may not perform services for the client of another auditor without the latter's consent in a matter with which the other auditor has already begun to deal, unless the latter refuses his consent without reasonable ground; for this purpose, it shall be regarded as a reasonable ground, *inter alia*, if the client has asked the refusing auditor to charge a fee less than that which is reasonable and customary in the profession, or if the auditor has been asked to act contrary to his professional duties.

It may be noted that replacement of auditors is not a common practice in Israel.

Israeli law does not deal with the case of an auditor who desires to retire from his engagement. There does not seem, however, to be any reason why he should not be able to do so. The Companies Ordinance provides expressly that the auditor's remuneration is to be determined by the general meeting of shareholders; in practice, however, the general meeting assigns this task in the majority of cases to the Board of Directors.

(3) *Legal responsibility*

There are no decided court cases in Israel on the subject of the auditor's legal responsibility for negligence toward third parties. The view generally

maintained² is that an auditor should be held liable for fraud as well as for negligence not only at the suit of his client but also at the suit of third parties. No court claims against auditors have as yet been instituted in Israel, though it may well be that financial claims which have been brought against auditors have been settled without undue publicity.

(4) *Communication between auditor and Board of Directors, shareholders, and other external users:*

(a) *Communication with shareholders*

Communication between the auditor and the shareholders of public companies is almost solely through the auditor's report on the financial statements. The law does not impose on the auditor the duty to attend at the annual general meeting. The Companies Ordinance provides that the auditor shall be entitled to attend any general meeting at which any accounts which have been examined or reported on by him are to be laid before the company and to make any statement he desires with regard to such accounts. In practice, however, the auditor receives notice of general meetings and attends the proceedings.

General meetings of shareholders are however, in the majority of cases a matter of formality, with only a low number of shareholders attending. Even where shareholders are present at the meeting and ask for information, there is no rule of law which states that shareholders are entitled to be furnished answers either by the management or by the auditor. It is common practice for the Chairman of the meeting to request the auditor to reply to certain questions that have been asked by shareholders. There is no legal requirement for the auditor's report to be read before the general meeting, nor is it the practice to do so.

(b) *Communication with Board of Directors*

Communication between the auditor and auditee is generally effected through company officers who discharge the day-to-day company functions, including the managing director who is commonly a member of the Board of Directors. Although the Companies Ordinance places on company directors the responsibility for all company operations, the situation in practice is that some of the directors, particularly in the case of public companies with Boards of Directors consisting of numerous members, maintain communication with the company only through attendance at Board of Directors

meetings which are held only several times during the year, meetings at which management renders a report on the affairs of the company.

The form of communication and relationship between the auditor and the Board of Directors has not yet become crystallised in Israel. The law is silent as to the auditor's right or duty to attend the Board of Directors meeting at which the financial statements, including the auditor's report, are discussed. In practice, the auditor is invited to attend, answers questions and offers explanations concerning the financial statements. The furnishing of information by the auditor to a member of the Board of Directors other than at a Board of Directors meeting is not common practice. The law does not prescribe the circumstances in which the auditor is under a duty to call the attention of the Chairman of the Board of Directors to any particular matter, such as a breach of law.

In this regard, the Auditors (Mode of Performance) Regulations, 1973, contain a useful provision to the effect that 'the auditor shall request to appear before the Board of Directors of the audited body, if it is so required in the circumstances of the case' (Section 23). In the case of audit letters containing comments on matters arising out of the audit, it is the practice, where the comments relate to significant points, to furnish the Chairman of the Board of Directors with a copy of the audit letter.

Many public companies have in recent years set up 'Balance Sheet Committees', consisting of members of the Board of Directors, including the managing director, for the purpose of considering the draft financial statements, clarifying points with the auditors and laying recommendations before the Board of Directors as to approval of the financial statements. These committees confine their activities to consideration of the annual financial statements and do not maintain constant and regular touch with the auditors, as in the case of Audit Committees in the USA. We may note that in the case of Government corporations, communication between the auditor and the Board of Directors is much closer (see below).

(c) *Communication with external users*

Direct communication between external users, such as a bank or other credit grantor, and the auditor may exist only where this has been requested by the external user and the auditee has consented thereto. Instances of this kind are rather infrequent. A more common occurrence in Israel is where certain public agencies are empowered to request and obtain additional information from the auditor.

²See Ch. Cohen (Judge of Supreme Court), Auditor's Responsibility to Third Parties, in *Roeh Hacheshbon*, vol. 16, Jan.-Feb. 1966.

(5) *Form of Auditor's Report:*

(a) Until 1970, the form of auditor's report rendered in Israel was generally that shown in Appendix I, based partly on the requirements of the Companies Ordinance (Section 109(1)). It is to be noted that the Companies Ordinance required the auditor to state in his report whether the balance sheet (and not the statement of profit and loss) exhibited 'a true and *correct* view'.

In 1970, the Institute published 'The Uniform Text of the Auditor's Report'. This text is shown in Appendix II. This text is identical to the form of auditor's report accepted in the USA, except for omission of the reference to consistency in application of accounting principles, and with the addition of the final paragraph which is included to meet the requirements of the Companies Ordinance or the Securities Law.

The reason for omission of the reference to consistency is that observance of consistency is included among the auditing standards, so that in the opinion of the Institute the auditor's report need refer only to cases of lack of consistency.

The auditor's report covers only the balance sheet and the statement of profit and loss and does not cover the statement of changes in financial position, though such statement is included in the published financial statements of public companies. The Institute is currently preparing a recommendation making it mandatory to include a statement of changes in financial position with the basic financial statements.

(b) As to consolidated statements and reliance on other auditors, the Institute in 1973 published a uniform text for the auditor's report (see Appendix III), containing a reference to other auditors, with indication of the percentage of assets and income – included in the related consolidated totals – reflected in the statements reported on by the other auditors.

There is no limitation on the percentage of assets and/or income reflected in the statements of the company certified by the other auditor on whose report the principal auditor relies. Cases in which such percentage is in excess of 50 are not uncommon in Israel.

It is also common practice to indicate reliance on another auditor where a company reflects its share in undistributed profits of other companies on the equity basis. In such case, disclosure is made of the amount of related profits included in the statements of the other auditor.

(c) (1) The circumstances in which an auditor in Israel will depart from the uniform text of the auditor's report and the wording then used are

basically similar to what is accepted practice in the USA.

(2) Israel recognises 'partial disclaimer', in instances such as where uncertainty exists concerning a specific item or items. In the USA partial disclaimer is included in the category of 'qualifications'.

(3) The Institute specifically recommends that the wording 'subject to note . . . ' be discontinued and that the auditor state his position clearly. Where a qualification is intended, the wording to be used is 'except for . . . '. In the case of a partial disclaimer, the facts are to be clearly disclosed and the auditor is to state expressly that he is unable to express an opinion; he may then use in the opinion paragraph the wording 'subject to the foregoing . . . '.

(4) Unlike the practice prevailing in the USA, the auditor in Israel need not state in the auditor's report that there has been a change in consistency, provided the financial statements give adequate disclosure of the change and its effects, and the auditor consents to the change. Certain auditors follow the practice of referring in the auditor's report to the change in consistency and its effect, with or without indication as to their concurrence with the change.

(5) The auditor may include in his auditor's report supplementary information on the audit procedures followed or on the financial position of the auditee. In practice, it is uncommon to furnish particulars as to alternative audit procedures adopted, and, with respect to financial position, information is stated only with respect to post balance sheet events. The Institute has recommended reduction to a minimum of the furnishing of supplementary information in the auditor's report and that management be requested to include supplementary information concerning financial position in the notes to the financial statements.

(6) In 1969, the year in which the Institute first published its recommendations on 'Qualifications and Disclaimers in the Auditor's Report', the percentage of qualified opinions on the financial statements of public companies was relatively higher than the corresponding percentage for that year in the USA and Canada (excluding cases of inconsistency). In recent years, however, this percentage has dropped in Israel to a lower level than that obtaining in those countries (comparison is based on statistics furnished for the USA in

'Accounting Trends and Techniques' and for Canada in 'Financial Reporting in Canada'). The reason for the high percentage of qualified opinions in 1969 is probably to be seen in the fact that the year 1969 was one of the first years following the preceding period of economic recession and many companies had not yet overcome the effects of that recession. Another reason for the low percentage of qualified opinions in recent years is that the Securities Law, which was enacted with effect from 1970, expressly provided that the financial statements are to be prepared in conformity with accepted accounting principles and are to furnish the disclosure required by the regulations made under that law. Departure from accounting principles and inadequate disclosure are thus contrary to law, so that the managements of public companies can ill afford to publish financial statements on which the auditors have rendered qualified opinions because of departure from accounting principles and inadequate disclosure. More common cases are those of partial disclaimer, mainly in instances where uncertainty exists as to a specific item or items.

The directives issued by the Government Corporations Authority to the Boards of Directors of Government Corporations state that where the Board of Directors decides to approve financial statements on which the auditors have rendered a qualified opinion, the decision and the reasons therefor are to be incorporated in the minutes of the Board of Directors' meeting. This reasoned resolution is to be placed before the meeting of shareholders along with the financial statements.

(d) The Institute's recommendations, published in 1972, on unaudited financial statements are no different from those accepted in the USA. An unaudited report is defined as a financial or accounting report to which the CPA has not applied auditing procedures sufficient in scope to enable him to render an opinion. As a result of this recommendation, the practice of issuing 'Negative Assurances' is no longer permitted, except for 'comfort letters' to underwriters which are also common in the USA.

Society's expectations from the auditor and the auditor's report

(1) *Definition of 'Society' and sources of information on society's expectations*

'Society' is a much too extensive term, and for the

purpose of our study we shall refer to the vast body of users of financial statements.

The users interested in the financial statements and the auditor's report are a wide and diversified body. Apart from management which prepares the financial statements and is not covered by our discussion, users of financial statements may be classified into the following main groupings:

- (a) Members of the Board of Directors who are not actively engaged in management.
- (b) Shareholders.
- (c) Credit grantors, customers, tax authorities, employees and others who are in daily contact with the audited body.
- (d) Prospective investors and credit grantors.
- (e) The general public, such as controlling authorities (Security Authority, Controller of Banks, etc.), stock exchanges, analysts and investment consultants, the financial press, economic research institutions, State agencies concerned with economic planning.

Very few empirical studies have so far been conducted in any part of the world to ascertain the public's expectations from auditors in general and from the auditor's report in particular. Even in the USA, research on auditing, as distinct from accounting, is still in its early stages, with the emphasis placed on the viewpoint of those performing the audit rather than the viewpoint of report users. It cannot be doubted that in order to arrive at well-founded conclusions as to the public's expectations, it is needful to carry out empirical research in order to enquire into such topics as: How far is the auditor's report relevant for decision-making by the different groups of users?; the effect of qualifications, disclaimers and supplementary information in the auditor's report on different users; expectations of one group of users being inconsistent with expectations of another group; materiality from the aspect of the various users; satisfying the expectations of users by means other than the auditor's report. It is also essential to enquire into the disparity in the expectations of users of different countries where the circumstances are dissimilar. The circumstances referred to are:

- (a) Access available for users to sources of information on the auditee's operations over and beyond the information presented in the financial statements and the auditor's report.
- (b) The trend of development of the money market – institutional investors versus private investors; availability of professional financial analysts and investment consultants.
- (c) The specific demands which controlling bodies and Government Agencies make on the auditor.

Having regard to these circumstances, account is to be taken of the fact that Israel is a small and developing country, its money market has not yet attained large dimensions, the body of small investors in the country has no voice in affairs, there is no organized profession of financial analysts and investment consultants (a function currently exercised by the banks), while financial information generally flows through informal channels, for the reason mainly that company directors and investors know each other personally, with many directors serving in that capacity on the Boards of many companies. On the other hand, a large volume of investments is being effected in Israel by foreign investors who occasionally are not represented on the Board of Directors of the investees. Also, intervention by the State in economic activity is very extensive in Israel and consists not only in the exercise of control and supervision but also in offering effective aid and financing and making direct investments in corporations ('Government Corporation').

Because of the lack of research studies on the needs and demands of the vast and diversified body of report users, recourse is had, in discussions on the requirements of the public, to the arguments mainly advanced by analysts and investment consultants in countries with a developed money market. At study days devoted to, and technical articles dealing with, the subject, the views of bankers, company managers, and academic and practising accountants are also being voiced. As to the views sounded by accountants, we must call attention to the danger that the conclusions drawn by them with respect to users' requirements are no more than an intellectual exercise in the course of which they purport to place themselves in the situation of report users and then proceed to construct an intellectual edifice of theoretical demands and expectations, without there being any assurance that such demands and expectations have in fact any substance in reality. Another source for ascertaining the demands of users is provided by the courts of law.

Study days for discussion of the public's expectations from auditors have also been held in Israel, at which directors, bankers, representatives of investment companies, judges and auditors have ventilated their views. Demands and criticisms against auditors have been levelled also in the Press and in articles appearing in professional periodicals.

The demands, criticisms and expectations directed at auditors in Israel do not differ in substance from those encountered in many Anglo-Saxon countries. We shall attempt to present hereafter a brief summary and critical review of those demands, criticisms and expectations.

(2) *Demands in the name of the 'ordinary' man*

The view generally held is that the ordinary man does not understand the auditor's report, and, that being so, it is maintained that the auditor's report should be simplified and abbreviated to one sentence stating that the financial statements are fair and reasonable,³ so that the auditor's report will contain no reference to accounting principles, auditing standards, financial position or operating results. The arguments on behalf of the ordinary man are being levelled not only against the auditor's report but also against the financial statements themselves which, it is contended, should likewise be simplified and abbreviated. This has led to the suggestion that it would perhaps be expedient to draw up two sets of financial statements: simplified statements designed for the ordinary reader and supplementary statements designed for the professional. We are not aware whether a like suggestion has been made with respect to the auditor's report, though it would seem that the considerations which support preparation of dual financial statements apply with equal force also to the auditor's report. We believe that an abbreviated auditor's report containing one simplified sentence will not meet the needs of the majority of report users who, as is noted hereafter, expect to be furnished with an amplified form of auditor's report rather than a shortened one. It must not be lost sight of that the ordinary man does not possess adequate ability to read intelligently and appreciate financial statements and the auditor's report, so that there is no point in simplifying and abbreviating that which is inherently complex. The attitude taken by the ordinary man is that the auditor has prepared the financial statements and has certified them to be correct and accurate, regardless of the wording of the auditor's report and notwithstanding the profession's repeated warnings that the financial statements are the representations of management and not of the auditor. It may well be that this attitude results not only from lack of knowledge on the part of the ordinary man, but more particularly from an intrinsic urge to have someone definite on whom reliance can be placed. A simplified and abbreviated form of auditor's report will only give rise to an illusion of accuracy which is non-existent and will not eliminate the lack of clarity that attaches to such terms as 'fair' and 'reasonable'.

Accordingly, when we discuss hereafter the report users, we shall not be referring to the ordinary man. This is not to say that the financial statements and the auditor's report should be addressed only to the

³Proposed by the Accountants International Study Group, 1968.

professional reader. The term users is applied to 'trained users' of financial statements, i.e. men of business who possess the training needed for reading and understanding the statements.

(3) *Auditor's report from the users' viewpoint:*

(a) *Accepted auditing standards and accounting principles*

The uniform text of the auditor's report in Israel, the USA and other countries includes the following:

(a) The scope paragraph states that the examination was made in accordance with generally accepted auditing standards, and that the auditor applied such auditing procedures as he considered necessary in the circumstances.

(b) The opinion paragraph states that the financial statements present fairly the financial position and operating results in conformity with generally accepted accounting principles.

As to accepted auditing standards, no one but the auditor knows what they are. The scope paragraph is in fact designed to emphasise that the examination performed is no more than a test examination based on evaluation of internal control procedures, though this does not appear so from the text.

What is implied by the term 'accepted' as applied to auditing standards and to accounting principles? In the complex world of business as transacted currently, the investors in a business may belong to country A, the company operating the business may be registered in country B, the enterprise itself may be located in country C, while the auditors may belong to one or other of those countries. Since no uniform accounting principles and auditing standards of international application have as yet been formulated and accepted, the question may well be asked: where, in what country, are those principles and standards to be regarded as 'accepted'? Again, what is the distinction between 'accepted' principles and standards which have been applied in preparation of the financial statements, and 'accepted' with respect to investors and other users?

Another question that may be asked is: Is there one specific country in which accounting principles have been defined in an overall and comprehensive manner? If we take Israel, we shall find that as yet there are many areas for which no accounting principles have been formulated so that, by way of example, fixed assets and related depreciation may be reflected on basis of historical cost, on basis of cost adjusted to the exchange rate or a particular index, or at appraised value. Moreover, the same company may apply to different parts of its assets

or even to assets of the same category any one of the bases noted above, and still be considered to have applied 'accepted' principles. And where a novel point arises, and we endeavour to ascertain from the professional literature of other countries what is regarded as 'accepted' with respect to the particular issue, we are likely to find that Canada, for example, has recommended one method of treatment, the USA has no clear recommendation, while professional literature puts forward a variety of different solutions. Again, with respect to those matters for which the profession has determined what is 'accepted', it has allowed at the same time in many instances several alternative methods which management may apply at its option, so that, so long as there is no change in consistency, the reader is not in a position to gather either from the financial statements or from the auditor's report what is the effect of using one method as against the use of an alternative method.

(b) *Generally accepted accounting principles (GAAP) and 'fairness'*

The most important feature of the auditor's report is the assertion that in the opinion of the auditor the financial statements present fairly the financial position and operating results. This poses the question, from the viewpoint of the user, whether the words 'present fairly' are to be read as standing by themselves, independently of the words which follow, namely 'in conformity with generally accepted accounting principles', or whether the words 'present fairly' form an integral part of the assertion 'in conformity with generally accepted accounting principles'.

The question has been debated in the professional literature of the USA and Canada. In the USA, Prof. Briloff conducted an empirical study⁴ on this issue, and the responses received when surveying selected members of the accounting profession and the financial community may be summarised as follows:

	<i>Report users %</i>	<i>Accounting profession %</i>
1. The statements are both fair and in conformity with GAAP	44	34
2. The statements are fair because they are in conformity with GAAP	22	30

⁴'Old Myths and New Realities in Accountancy', *Accounting Review*, July 1966.

3. The statements are fair only to the extent that GAAP are fair	28	20
4. None of the above	6	16
	—	—
	100	100
	—	—

The answers furnished indicate not only that report users are not clear in their minds as to the relationship between 'fairness' and GAAP, but that professional people too hold contradictory views. It is quite conceivable that, in theory, the statements may be in conformity with GAAP without being 'fair', while conversely the statements though 'fair' may not be in conformity with GAAP.

The point under consideration has in recent years acquired great significance in the USA, particularly in view of the Court's direction to the jury in 'The Continental Vending Case' that fairness of presentation was to be considered by the jury, but not just as a matter of mere conformity with GAAP. The SEC is also leaning of late to the approach that the concept of fairness is to be widened and is to be regarded as a criterion in its own right.⁵

The AICPA has taken the position that 'fairness' and GAAP are inseparable. Fairness results from adherence to GAAP. A fair presentation is to be understood within the framework of GAAP, much as the behaviour of football players is to be understood as 'fair' within the framework of the rules of football.⁶ This approach does not even entail the interpretation that all GAAP are also fair. Accordingly, fair presentation is possible only within the framework of GAAP. The possibility formerly available in the USA of deviating from GAAP in order to achieve fair presentation is no longer available today.

As against the approach adopted in the USA, the position in Canada is that the auditor is to express his opinion both on adherence to accepted accounting principles and on fairness.⁷ A letter addressed in 1972 to members of the Canadian Institute by the Accounting and Auditing Research Committee states expressly that the auditor may depart from the accepted accounting principles recommended by the Canadian Institute, but then he

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must qualify his opinion with respect to adherence to GAAP, though this does not necessarily involve the need for a qualification with respect to 'fairness'. In spite of this separation between 'fairness' and GAAP, the wording of the auditor's report in Canada is identical in this regard to the US auditor's report.⁸

How are these problems met with in Israel? The opinion paragraph in an Israeli auditor's report embodies one change from the text of the auditor's report in the USA and Canada, namely, the words 'in conformity with generally accepted accounting principles' immediately follow the words 'present fairly' and precede the words 'financial position and results of operations', whereas the wording in an auditor's report in Canada and in the USA is 'presents fairly financial position and operating results' followed by the words 'in conformity with generally accepted accounting principles'. We are not aware whether this change has been introduced in Israel with the definite intent of precluding separation between 'fairness' and 'GAAP' or whether the change is a mere matter of syntax, due to the fact that in Israel the rest of the sentence makes no reference to consistency.

On the other hand, the Auditors (Mode of Performance) Regulations, 1973, provide that the auditor may, if he is satisfied that it is right to do so having regard to accepted professional considerations, depart from the standards prescribed in these Regulations, and where he so departs, he shall state the particulars of and the reasons for the departure, but this shall not derogate from the auditor's duty to render an opinion as to whether the financial statements reflect fairly financial position and operating results. It would seem, therefore, that the effect of these Regulations is to permit separation between 'fairness' and 'accepted accounting principles'.

It is worthy of note that in a case tried in 1974 before the District Court, Tel-Aviv (*Varshenbrot v. The Electricity Corporation*), a shareholder petitioned the Court to restrain the company from approving the financial statements at the annual general meeting of shareholders, on the ground that linkage differences on index-linked obligations were carried to deferred charges instead of being reflected, as recommended in an Opinion published by the Institute, as a current expenditure. The Court denied the petition of the shareholder on the ground, among others, that though the Securities Law requires preparation of financial statements

⁵See address of A. A. Sommer, Jr., SEC Commissioner, *CPA Journal*, May 1974, page 63.

⁶See G. F. Daminiak and I. G. Louderback, 'Present fairly' and 'GAAP', *CPA Journal*, January, 1972.

⁷See CICA Handbook, Section 2500.08.

⁸See also Leonard G. Eckel, 'The Two-Part Audit Opinion', *CA Magazine*, June, 1973.

in accordance with accepted accounting principles, this, in the opinion of the Court, does not include principles which are the subject of controversy among professional people. We may mention that the Opinion above referred to does not recommend an alternative method of treatment for linkage differences on index-linked obligations.

So far as concerns the report users, it would seem that the approach adopted by AICPA does not satisfy their expectations. In accordance with this approach, the words 'present fairly' may be omitted altogether from the auditor's report, leaving only the assertion that the statements reflect financial position and operating results in conformity with GAAP. The assertion 'in conformity with GAAP' already implies that these principles have been observed. This approach, it would seem, also involves the danger that the best professional talent will be disinclined to pursue the auditing function and will rather prefer to engage in management services and tax consulting services.

As noted earlier, the profession has not yet arrived at a comprehensive definition of GAAP nor at a determination of the circumstances in which only one of several possible accepted alternatives is to be applied, so that there is still ample manoeuvring scope available to those who prepare the financial statements. Accordingly, statement users expect the auditor to report that the alternative best suited to the circumstances of the particular case was applied and not merely that the alternative principle applied is included among 'accepted principles'. Moreover, statement users harbour the belief that apart from possessing adequate knowledge about accounting principles, the auditor is also a person with understanding of business dealings, and they therefore expect the auditor to have such acquaintance with the operations of the reporting entity as to permit him to report first and foremost whether the financial statements do indeed reflect business position. In other words, users expect the auditor to be satisfied that the financial statements are a true reflection of business reality, even though certain transactions have been clothed in legal form or elegant language which do not convey true, economic meaning.

Users would also wish to be provided with such disclosure as will permit them to arrive at the state of operating results as prior to application of the different management decisions, such as the transfer of profits to, or absorption of losses of, connected companies through such legitimate procedures as the setting of purchasing and selling prices, commissions, allowances, services fees, special interest rates, etc. Users definitely expect the auditor to

report on fairness of presentation, as a criterion in its own right.

The disinclination on the part of the profession in the USA to recognise 'fairness' as a distinct criterion is attributable to the fear that lack of a clear-cut definition of 'fairness' might result in too heavy legal responsibility being placed on the auditor, and to the likelihood that determination of 'fairness' might become a matter of subjective judgment depending on the approach of the ordinary man, such as the jury members in 'The Continental Vending Case'. It has also been contended that even if the determination of 'fairness' as a distinct criterion is left to the judgment of the auditor, then each auditor will make the determination in accordance with his own personal views, so that one auditor will consider use of the FIFO method as 'unfair', another will so consider the computation of depreciation on basis of historical cost, still another will regard as 'unfair' the presentation of marketable securities at other than market value, while still another will consider statements unadjusted for price level changes as being 'unfair' presentation. There can be no doubt that the test of 'fairness' ought not to be a matter of subjective judgment for every layman. On the other hand, so long as an accounting principle is an accepted principle, it must also be considered as 'fair'.

We believe, however, that there is definite need for an overall 'fairness' criterion which is to be applied by the auditor, in accordance with his judgment, in every specific case, first with respect to matters as to which there is no accounting principle prescribed, and, secondly, with respect to the business aspect reflected in the statements, that is, whether the statements, considered from the viewpoint of a reasonable businessman, present business reality.

(c) Reference in auditor's report to reliance on other auditors

The reference in the auditor's report to reliance on other auditors, with indication of the percentage of assets and of income or of undistributed profits covered by other auditors' reports, is not so well understood by statement users. Are they supposed to understand that in relying on other auditors, the principal auditor means to imply that he bears no responsibility for the information which is the subject of reliance, the responsibility therefor being entirely that of the other auditors, or does the principal auditor mean to state that he is jointly responsible with the other auditors or that the primary responsibility rests with the other auditors? The auditor's report, both in Israel and

abroad, does not even mention the other auditors by name. The users expect the auditor who certified the financial statements to bear full responsibility for audit of all the information presented in the financial statements. In appointing the auditor, the shareholders have placed their confidence in him; it being a matter of indifference to them what auditing procedures have been applied or whether other auditors are secondarily responsible for part of the audit.

(d) Further information which users expect to obtain from the auditor's report

The auditor's report has for the most part become a standardised, arid document. An adverse opinion or total disclaimer are after all very seldom met with in practice. So far from encouraging the inclusion of supplementary information in the auditor's report, the profession expressly recommends that auditors refrain from furnishing any such information. The instances in which auditors' reports on the financial statements of public companies state qualifications with respect to departure from GAAP are most infrequent, and this having regard to the requirements of the Securities Authority. Instances of qualifications for lack of consistency are common in some countries, while in others the change in consistency is only given disclosure in the notes to the financial statements. Strictly speaking, qualifications of this category are not really qualifications in the true sense of the word, as the auditor goes on to assert that he concurs with the change. We are thus left with the instances of 'partial disclaimer' mostly for lack of certainty, which in essence only means that in the circumstances, management has done its utmost but could not resolve the uncertainty.

The trend towards standardisation of the auditor's report appears to be continuous and unceasing. In the USA, the AICPA published in 1973 a proposal⁹ recommending the abolition of 'disclaimers' altogether (except with respect to limitation of scope of the audit) as well as use of the term 'subject to' and to retain only 'qualifications' or an 'adverse opinion'.

It must be observed that the rules laid down by the profession have exercised such a constraining effect on the auditor as not to permit him to take account of borderline cases – he must either render a 'clean' opinion or else he must qualify his opinion. As a result the only channel of communication between the auditor and the outside world has become blocked. This state of affairs

constitutes complete disregard of business reality and of the basic expectations of users. The complexity of business transactions in the contemporary world and the vast possibilities available for disguising the true nature of transactions through cloaking them in a variety of legal forms – all render the task of the auditor much too onerous, if not rather delicate, inasmuch as it is for the auditor to go behind the forms employed in order to arrive at the true implications of transactions carried out, a task which requires segregation of facts from management's assumptions and interpretations.

Occasionally, the auditor may arrive at an interpretation other than that adopted by management, though the facts may be such as to lend support also to the interpretation followed by management. And since the auditor is unable in these circumstances to qualify his opinion, he will set his conscience at rest by including appropriate disclosure in the notes to financial statements. However, here we are up against the paradoxical assumption embraced by the profession to the effect that the notes are the representation of management, so that even where management will consent to state in the notes 'assumptions' and 'interpretations' which it has adopted, it can hardly be expected that management will also consent to include in the notes 'interpretations' other than its own, not to mention the fact that the notes are scarcely the medium through which information not originating with management is to be disclosed. The net result is that report readers are completely unaware of the availability of differing interpretations. Moreover, owing to the large volume of notes presented in the consolidated statements of business concerns, information of particular significance may be lost sight of, because readers do not see the wood for the trees.

As to the numerical information contained in the financial statements, it may be noted that figures are stated to represent accuracy to the last currency unit, although a great many of the amounts are in fact based on estimates. Neither the financial statements nor the auditor's report point up the fact of inaccuracy and the degree of uncertainty attaching to the figures. For example, the report reader would wish to be informed that the amount shown for receivables is stated at a degree of certainty of 95 per cent and is only ± 10 per cent of the amount reported.

Report readers expect to obtain from the auditor adequate information as to the degree of credibility of the financial statements and the extent of uncertainty involved in the statements. They

⁹*Proposed Statement on Auditing Standards: Auditors' Reports*, AICPA, 29 August, 1973.

would like to know what are the facts as distinct from the assumptions and the interpretations on which management has relied and what are the auditor's own views on these assumptions and interpretations, in order that they – the report users – may be in a position to draw their own conclusions.

The course that suggests itself for realising users' expectations is to turn the auditor's report into a vitalised report that is adapted to the circumstances of each particular case. This can be achieved if we take the far-reaching step of giving formal recognition to the fact that the 'notes' are those of the auditor and not of management. In order to preserve the responsibility of management, the directors will append their signature at the end of the notes by way of expressing their consent to the factual information (where they do not consent, they will state their reservations). A less extreme course is to expand the auditor's report through inclusion of an intermediate paragraph reciting the assumptions and interpretations of management as well as the auditor's own, or indicating other possible interpretations. The opinion paragraph will then state that 'subject to soundness (or correctness) of the assumptions (or interpretations) made by management, above referred to, the accompanying financial statements present fairly . . . '.

The auditor is also to state significant information on financial position – in an intermediate paragraph – and this even where the information is included in the notes. Report users expect their attention to be drawn to significant matters reported in the statements. To cite an example: the balance sheet of a certain company reflected at cost machinery purchased from an associated company; the price was based on appraisal made by a valuer. As agreed with the tax authorities, depreciation was allowed to the acquiring company on the basis of cost to the selling company, the difference between the cost basis and appraised value basis representing a material amount. Although these facts were disclosed in the notes to the financial statements, we think that the auditor's report ought to have called attention to the specific circumstances and to their possible effect on the company's taxability in subsequent years.

(4) *Other expectations from the auditor:*

(a) *Alertness*

Users expect the auditor to be more alert and dynamic. The classical description of an auditor as being a watchdog is no longer in accord with

users' current expectations; perhaps he ought to be a hunting dog. Alertness is particularly called for in situations entailing the risk of insolvency and resulting liquidation. A question that is repeatedly asked whenever an economic enterprise collapses is where were the auditors? Other cases in which alertness is required is where directors act contrary to law or contrary to company regulations. In all these circumstances, the public expects the auditor not to remain passive but, at the least, to convey a warning, though it is far from clear what exactly the auditor is supposed to do or to whom the warning is to be addressed. In Germany, for example, the auditor is in such circumstances under a duty to speak out. This he does through reporting the facts in the long-form report addressed to the Supervisory Board (and not in the auditor's report which is addressed to outsiders). In Norway, the auditor is legally empowered, where his warnings remain unheeded by management, to apply to the Court and ask for a general meeting of shareholders to be summoned. In other countries, the auditor may not, because of the obligation of secrecy by which he is bound, take any active step except that he need take into consideration the effect, if any, on the company's financial position. In the USA the practice has developed, where a company is in serious financial straits, for the auditor to refrain from expressing an opinion as to whether the company can still be considered a 'going concern'.

Such an approach would seem to be commendable so far as report users are concerned, while considerations of public policy also seem to support the proposition that where management is acting contrary to law, the auditor ought to take certain steps in the matter even though the action of management has no effect on the financial statements.

Members of the Board of Directors who are not in active management, as also the shareholders, expect the auditor to be present at directors' and shareholders' meetings at which the financial statements are discussed and to exercise initiative in calling attention to any matter which he considers significant and to answer in a free and uninhibited way any questions that may be put to him.

(b) *Auditing the audit*

Ascertainment of the quality and professional level of the audit performed can be made mainly through examination of the auditor's working papers, but these are not subject to public scrutiny except in instances where legal proceedings have been instituted against the auditor. Although the

public has confidence in the auditor's professional integrity, public policy would seem to dictate that supervision of some kind be exercised over the manner in which the audit function is being carried out. Therefore, the interest which the SEC in the USA has recently shown in this topic is highly welcome. In Israel, too, the Securities Authority scrutinises financial statements and turns to the auditor in order to clarify a variety of points, though such scrutiny does not extend to examination of working papers. In certain circumstances, the Israel tax authorities (see below) may require production of the audit programme.

In some countries, including Israel, the profession has set up committees to deal with, and call attention to, departures from professional recommendations, but this applies only to such departures as are evident from the audited financial statements.

(5) *Potential extensions of the attest function:*

(a) *Types of extension*

In dealing with potential extensions of the attest function for the benefit of users, a distinction has to be made between qualitative extension which concerns the objectives and types of the audit and quantitative extension which concerns the volume of data covered by the audit. A distinction has also to be made between data which are furnished by management and are unaudited, and such data as are not yet furnished at all but which are deemed to be desirable for users. Another distinction made is that between the audit of data presented (or expected to be presented) in interim statements and in the annual report – comprising the financial statements, directors' report and a variety of statistical information – and audit of data that are furnished to State, municipal and public agencies in connection with various confirmations and certifications.

As to extension of the attest function necessitated by demands of Government and public agencies, Israel has quite an extensive experience in this area, a topic that is discussed separately below.

(b) *Audit of interim statements*

Preparation of quarterly financial statements for shareholders is still uncommon in Israel. The main problem is that the time required and the cost involved do not permit the audit of such statements to be complete. Users would be content with a review made by the auditor who is acquainted with the business and its specific problems, followed by a brief auditor's report containing 'negative assurances'. However, the profession generally disapproves of such form of report

because of the legal responsibility that might be involved. In practice, auditors in Israel will review interim reports only where they are designed for the use of the management or auditors of a parent company but not for external users, and will indicate that the report is 'unaudited'.

(c) *Audit of data included in the directors' report*

Are these data to be subjected to audit? The objective of the audit would be to verify whether financial information included in the directors' report conforms to the information presented in the audited financial statements, and would also extend to other quantitative data, such as number of employees, volume of production, sales, orders and different statistical information. Empirical studies conducted have elicited the fact that shareholders attach much greater significance to the directors' report than to the financial statements,¹⁰ so that it is most essential to assure the reliability of the information incorporated in the directors' report. We may note that in certain countries it is the practice for the auditor's report to refer to the directors' report.

Israel has not adopted the practice of subjecting the director's report to audit. Public companies will sometimes transmit to the auditor for review a draft copy of the directors' report, but this is not obligatory. The form and contents of the directors' report of Israeli public companies are still uncrystallised.

(d) *Audit of forecasts*

This topic has been much debated in professional literature. It would seem that while users are in favour of the audit of forecasts, the profession in most countries is not in favour. All we need say in this context is that in our opinion the attest function ought to be extended also to forecasts, and not merely to technical computations. However, the auditor is not in a position to express an opinion on business assumptions made by management, and he ought only to examine the fairness and reasonableness of the forecasts as based on the business assumptions made by management. The auditor's opinion should therefore state that the opinion is 'subject to the soundness of management's assumptions'. Hardly any experience has been gained in Israel in this area, though it is known that examination of forecasts has been made in Israel for specific purposes but not for the use of the general public.

¹⁰See L. Goldberg, G. L. Wood and R. C. Clift 'An Investigation into Shareholders' Attitudes', *Australian Accountant*, June 1968.

(e) Social audit

This is a novel topic and covers the responsibility of companies to the community, employees, consumers and the general public. The subjects to be included in social accountability and the appropriate form of reporting have not yet been defined and settled. These subjects are supposed to comprise: human relations, ecology, social aid, protection of minority groups, etc.

The topic now seems to be 'in fashion' in many countries and has awakened a keen interest in the minds of the general public as well as accountants. We believe that it is too early at this stage to extend the attest function to this area. So far as quantitative data are concerned, they may of course be subjected to audit, but if a more comprehensive and substantive audit is intended, then it would seem that the auditor is scarcely competent to perform the task. The entire subject of social accountability and audit is still undeveloped in Israel.

(f) Extension of types and objectives of audit

Extension of the types and objectives of the audit concerns the qualitative aspect of the attest function and has developed in two directions:

(1) The protection of the interests of minority shareholders, creditors and the public generally against those who occupy in the company positions of power and influence which they may exploit for their own advantage. The safeguarding of minority interests is a matter to which consideration is given in many countries. In Germany, for example, the Corporation Act requires management to submit a special report on all transactions entered into with connected companies, coupled with a declaration that the transactions were supported by adequate consideration. Such special report is to be audited and duly certified by the auditor. In Israel, an attempt has been made to deal with the problem through the Securities Law imposing the duty of the reporting and auditing of transactions with 'interested parties' (see below).

(2) The furnishing of information to report users on the basis of which they may exercise judgment as to the quality of management's performance and also make evaluations, comparisons and predictions as to the profitability of the business. As to management, users would wish to obtain from the auditor a report on the efficiency with which managerial functions have been executed. The subject of 'management audit' occupies a prominent place in professional literature. It has been said that management audit is effectively practised in Sweden; it would

seem, however, on closer examination, that what is applied in Sweden is not management audit in the strict sense of the term.¹¹ Still, the subject cannot be dealt with fully in this context. However, we do not envisage that the audit function is likely to be extended in this direction in the foreseeable future. However, there is no reason why users should not receive from the auditor a report on internal accounting and administrative control in order to satisfy users that management has taken all necessary steps to safeguard the assets and to prevent the occurrence of forgery and misappropriation, and has so organised the operating system as to permit the making of reasoned and well-founded decisions. As we are all aware, in formulating the audit programme, the auditor in any event reviews the system of internal accounting control, with the review being frequently expanded to include also administrative controls in order the better to become acquainted with the audited entity and also for the purpose of making recommendations for improvements and providing management services. Nevertheless, the profession has all along taken a position contrary to users' expectations, in that it has repeatedly argued that the regular audit is not aimed at the detection of forgery and misappropriation. Even where the auditor submits a special report on internal control procedures, the wording recommended by the AICPA¹² is hedged with so many qualifications that it is doubtful whether the report is adequate for users' needs.

As to the company's earnings capacity – which is also a test of the quality of management's performance – users would wish that the financial statements or the directors' report furnish more detailed analysis of operating results, such as 'Segment Reporting'; comparison of results to forecasts and analysis of deviations from forecasts; analysis of factors responsible for change in profits as compared with previous year results (changes in quantities and prices, product lines, publicity expenses, research and development costs, etc.). The majority of these data are not yet made available by management, though the trend is in favour of making them available.¹³ Considering management's sensitivity to such analyses and the fact that they are

¹¹See *The Audit Report* by B. Friedman (National Paper submitted to the Tenth International Congress of Accountants, 1972).

¹²SAP No. 49 – Reporting on Internal Control.

¹³See also SEC Release No. 33-5443 (December 1973).

necessarily based mostly on management policy, we believe that they should be subjected to audit by an independent accountant, the object of which would be to examine and give adequate disclosure of the assumptions, interpretations, and policies on which management has relied and whether they are consistent. The auditor's report to be rendered would need to be adapted to this type of audit.

Extension of the attest function in Israel*

We now propose to discuss briefly the areas in which extensions have occurred in the attest function in Israel, areas which are perhaps specific to the circumstances of Israel, namely:

- (1) Audit of transactions with 'interested parties'.
- (2) Audit of the computation of chargeable income and opinion thereon.
- (3) Audit and preparation of a variety of confirmations and certifications furnished to Government agencies and controlling bodies.
- (4) Special audits performed for the public sector of the economy – Government Corporations and enterprises of the Labour Federation.

(1) *Audit of transactions with 'interested parties'*

The Israel Securities Law and the regulations as to financial reporting made thereunder took cognizance of the fact that those who possess the power to exercise influence over the affairs of a company might utilise this power for their own advantage. The law therefore prescribed strict rules as to transactions with, and payments to, 'interested parties'. The definition of 'interested parties' is fairly extensive and comprises:

- (a) (1) Anyone holding 10 per cent or more of the share capital or voting power in a company or of the power to appoint directors.
- (2) Anyone having the power to appoint the General Manager.
- (3) Anyone acting as Director or as General Manager.
- (b) A company in which any one of those enumerated above holds 25 per cent or more of the share capital or the voting power or of the power to appoint directors.

With respect to 'interested parties', there is a duty to disclose in the annual financial statements the following matters:

(a) (1) The total of outstanding balances of loans granted to 'interested parties' and of all debts due from such parties, for which the company has assumed guarantee or has pledged its assets by way of security, with indication of the amounts applicable to loans, guarantees and pledges granted twelve months or over prior to balance sheet date, including the highest sum outstanding in the period of twelve months ending on the balance sheet date.

(2) Disclosure as above is not required for loans granted and guarantees assumed in the ordinary course of business and if their total balances outstanding do not exceed 10 per cent of the total of all outstanding loans and guarantees as at balance sheet date.

(b) Particulars of all payments made to an 'interested' party otherwise than in the ordinary course of business, whether by the company or by its subsidiary, including interest, management fees, services fees or other benefits (the amount of directors' fees is to be disclosed separately, whether paid by the company or by its subsidiary).

(c) The amount of turnover under transactions between the company and 'interested parties'.

(d) The amount of profits and losses arising from transactions otherwise than in the ordinary course of business entered into by the company or its subsidiaries with an 'interested party'.

As the auditor is required to indicate in his auditor's report on the financial statements of public companies that the statements comply with the terms of the Securities Law, the audit performed should extend to include examination of whether and to what extent transactions with 'interested parties' have been made 'in the ordinary course of business'. This term is not defined by law, but it may be assumed that when called upon to place an interpretation on the term, the Courts will apply the tests that would guide a reasonable man of business. This means that for judging whether a transaction is one entered into in 'the ordinary course of business' the auditor must have a grasp and acquaintance of the business conditions prevailing in the economy. Audit of such transactions therefore involves many points of difficulty, particularly in view of the wide terms of the definition of an 'interested party'. Nor can it be said with certainty, on basis of the experience gained in the limited number of years since the law has been enacted, whether the audit required to be performed in reference to these transactions is being carried out or admits at all of being carried out at an appropriate level. The fact stands out that in many instances of collapse of business enterprises in Israel (partly even after enactment of the Securities Law),

*Acknowledgment is due to Mr. Howard Glazer for his valuable contribution to part of the material included in this section.

one of the factors responsible for the collapse was found to be the conclusion of transactions, in disguised form, with 'interested parties' who were foreign companies registered in such territories as Liechtenstein, Luxembourg, or the Bahama Islands, so that the auditor could not possibly have any knowledge that these companies were in fact 'interested parties'.

(2) *Audit of the computation of chargeable income*

The Income Tax Ordinance requires every company to submit yearly a computation of chargeable income certified by a public accountant and adjusted by him for tax purposes under the terms of the Ordinance. The auditor's report on the computation states:

'We have examined the computation of chargeable income of The AB Co., Ltd. for tax year 197. ., which adjusts the income of the company according to the audited statement of income for that year, to the income reported by the company for income tax purposes for the said year.

'In our opinion, the computation of chargeable income has been drawn up in accordance with the provisions of the Income Tax Ordinance.'

The Assessing Officer has authority under Section 131B of the Ordinance to demand in writing from the auditor who certified the financial statements or the computation of chargeable income to submit a report on the extent and results of the audit carried out by him.

The power so vested in the Assessing Officer represents a compromise between the attitude of the Institute and that of the Income Tax Commission which involved, contrary to the wishes of the Institute, dictating to the profession a detailed audit programme for assesseees. In practice, this Section is invoked very rarely.

In performing these tax audits, where there is no definitive ruling as to a particular matter or a matter is open to different interpretations, auditors generally take a position favourable to the taxpayer, with adequate disclosure given of the relevant facts. The justification for this attitude seems to be based not only on the disparity between the respective positions of the taxpayer and the taxing authorities but also on the fact that the taxing authorities are not content with the audit performed by public accountants and carry out an audit of their own through tax inspectors.

(3) *Audit for purpose of confirmations*

Israel is a developing country and its Government is very deeply involved in the country's economic activity, through conferring financial aid, grants and subsidies and allowing tax benefits and relief for

customs duty and other levies. As a result, the different Government agencies and controlling bodies often require the submission of financial data duly audited and certified by public accountants. This not only places a heavy burden on public accountants, but at times confirmations are required with respect to matters which can hardly be subjected to audit examination. The Institute has set up several committees to maintain liaison with the Government agencies for the purpose of determining the formulation of the various confirmations that are required, but the fact is that these committees do not function fast enough to catch up with the rapid progress made by the economy. Not infrequently, the auditor is not in a position to issue the needed confirmation in the form required. To cite an example, the Ministry of Trade and Industry asks for a confirmation as to expenses for a specific research project supported by a grant made by Government. The auditor is very seldom acquainted with the research project, nor is he in a position to verify whether a sum paid by way of salary to a particular engineer is for services rendered for the specific project or for some other job. As a result, the confirmation that will be furnished will generally state that 'the expenses are based on documents and are recorded in the accounts as research expenditure'.

Another illuminating example is the case of banks requesting confirmation as to statutory matters, such as signing rights on behalf of a company or the borrowing powers vested in a company. These are matters involving interpretation of legal documents and clearly outside the scope of the auditor's functions. What happens in practice is that the auditor quotes in his confirmation the exact wording of the relevant company regulations or company minutes, leaving it to the user of the confirmation to apply his own interpretation. It is difficult to see why this task does not devolve on the legal adviser of the bank.

We believe that the profession has not gone far enough to curtail the demand for confirmations of this kind. Nor has it ever been authoritatively ascertained what is the extent of legal responsibility assumed by the auditor issuing these confirmations even in a qualified form. The point has never been tested in Court.

(4) *Special audit of public sector - Government Corporations and enterprises of the Labour Federation*

Government corporations - corporations wholly or partly owned by Government or in whose management Government participates - occupy a prominent place in the economy of Israel. These corporations are subject to audit by the State Comptroller. While the latter places reliance on the audit performed by

public accountants, he also requires extension of the audit to specific matters and the submission of a special report in addition to the regular auditor's report. For this purpose, the State Comptroller prescribed specific guidelines to be followed by the external auditors of Government corporations.

These guidelines provide, among other matters, for audit and reporting on:

Clause 10 – Serious deficiencies in administration or violation of accepted commercial principles or dishonest conduct – reporting should be to the Chairman of the Board of Directors and to the State Comptroller.

Clause 11 – The entity or an employee has acted in a manner giving rise to suspicion that a criminal act has been committed.

Clause 21 – Existence of financial or commercial relationship between the entity and another body (not being a subsidiary) which deviates from accepted norms. Full details are to be furnished in the report.

Clause 23 – Details of agreements deviating from the regular course of the entity's business.

Clause 29 – Auditor's opinion on the accounting system and internal control, with suggestions for improvements, where necessary.

Clause 30 – Comments on the mode and amount of insurance of the assets of the entity, fidelity risk and other risks arising in the ordinary course of operations.

Clause 31 – Non-compliance with statutory rules and regulations or disregard of the decisions of the competent authorities of the entity.

As may be gathered from the foregoing, the audit to be carried out is quite extensive; the auditor is not required, however, to express an opinion on the efficiency of management's performance.

A notable feature of the Israel economy is the existence of an appreciable number of manufacturing and merchandising corporations controlled by Hevrat Haovdim (the ceiling organisation of the Labour Federation). As for Government corporations, special guidelines have been prescribed for the audit of these corporations, with the object of extending the scope of the audit performed and for submission of a special audit report.

Summary and suggestions

The vast developments which have occurred in the contemporary business world have had the effect of enlarging the community of users of financial information and extending their demands and expectations from the auditor. The role exercised by the auditor in former years is no longer compatible with the

functions which the financial community imposes on him in the complex business world of today. The public has faith in the ability and integrity of the independent public accountant and therefore expects that his functions be widened and that his capabilities be utilised not only for the benefit of management and shareholder but also for the benefit of the public at large. Report users would also like to see the auditor's report change its character and become a vitalised report adapted to the circumstances of each specific case.

It must be admitted, however, that the profession has not kept abreast of economic developments and public expectations. If anything, the trend in recent years has been, particularly in the USA, which is considered the 'leader' of the accounting profession, in the direction of curtailment so far as concerns the auditor's functions, with the auditor's report continuing to be prescribed, standardised and devoid of vitality. The high hopes entertained in the sixties for extensions of the attest function have not been realised. Such extensions of the audit function as have occurred in practice have been initiated not by the profession itself but have been effected as a result of demands made under legal authority by State agencies, controlling authorities and Stock Exchange Commissions. The explanation for this trend is to be seen in the fact that in civil and criminal suits brought against auditors in recent years, judges have persistently tended to place even greater legal responsibility upon auditors, and also in the fact that the press and the general public have attributed to auditors some share of the blame for the collapse of business enterprises whenever this has occurred.

The attitude of the profession has been all along one of conservatism and caution, with a view to minimising its share of responsibility. Whether this is to be regarded as the right attitude is open to doubt. We believe that it did not enhance the prestige of the profession. We think the profession ought to pursue a course in line with public expectations as to the objectives and the underlying philosophy of the audit function. The gist of this philosophy is that in performance of the audit, the auditor is to have particular regard to the following:

- (a) The business aspect of the audited entity's operations as viewed by a reasonable businessman.
- (b) Safeguarding the interests of those who have no access to information on the audited entity and no authority to obtain any such information. In other words, protecting the weak against the strong. This in effect would imply affording protection to inactive members of the Board of Directors, minority shareholders, inactive investors and protecting even the company itself against the en-

forcing authorities having the powerful machinery of the law at their command.

Adherence to this philosophy virtually involves applying an overall test of 'fairness' as a test in its own right, extending over and beyond the concept of fairness as currently accepted by the profession, and this even for countries where the auditor's report does not assert that the statements are presented fairly in conformity with accepted accounting principles but only that the statements are true and fair.

We believe that if the profession does not adopt this philosophy of its own free will, it may find before very long that others, such as the judicial agencies or the securities authorities, will impose this philosophy on the profession as a legal dictate, a trend which already seems to be evident. The profession would therefore be well advised to embrace this philosophy voluntarily, a fact which would no doubt contribute to enhanced prestige.

Adoption of this approach to the audit function will also entail turning the auditor's report into an animated document which users will read with interest and find enlightening. The auditor's report must cease to be a standardised text in which the picture presented is either wholly dark or wholly bright, with intermediate situations depending entirely on the extent of disclosure made by management, since the notes accompanying the statements are the representations of management. Also, from the aspect of the legal responsibility involved, the auditor would perhaps be better situated if he recited in his auditor's report the assumptions made and the interpretations followed by management, with an indication that financial position as reflected in the financial statements is subject to soundness of those assumptions and interpretations.

Moreover, if the foregoing suggestions are adopted by the profession, the public, it may be assumed, will support the profession in its endeavours to restrict the legal liability of auditors. So long as the profession persists in the attitude that the sole function of the auditor is to examine whether the financial statements are in conformity with accepted accounting principles, and so long as these principles are in the state they are in today, the public can scarcely be expected to support the profession in its efforts to bring about restriction of legal liability, as that would hardly be compatible with the public's expectations from the auditor.

Adoption of the proposed approach to the audit function will also involve a change in the training of accountants, with greater emphasis on the study of economics and business administration.

Another significant point that needs to be stressed

is that the profession ought to exercise more self-criticism and also supervise due maintenance of an appropriate professional level of performance. Thus, the profession has not analysed cases of business failure with a view to ascertaining whether audit procedures applied ought to be improved and with a view also to informing the public that the audit performed in a specific case of failure was not carried out in a proper manner, so that failure might have been avoided had the audit been properly carried out. Although the profession may be treading here on rather delicate ground, we consider that the profession should of its own initiative find ways and means to examine its own performance and pass judgment on itself, rather than be exposed to the critical and supervisory attitude of outside factors.

Appendix I

Form of Auditor's Report in Israel (until 1970)

Auditors' report to the shareholders of...

We have audited the attached balance sheet as at ... and the profit and loss statement attached thereto. We have obtained all the information and explanations which, to the best of our knowledge and belief, were necessary for the purpose of this audit. In our opinion proper books of account have been kept by the company so far as appears from our examination thereof.

The said balance sheet and profit and loss statement are in agreement with the books of account. In our opinion and to the best of our information and according to the explanations given to us the said balance sheet gives a true and fair view of the state of the company's affairs as at ... and the profit and loss statement gives a true and fair view of the result of the operations of the company for the year ended on that date.

Appendix II

Uniform Text of Auditor's Report in Israel (since 1970)

Auditors' report to the shareholders of...

We have examined the balance sheet of ... as at ... and the statement of profit and loss for the year then ended. Our examination was made in accordance with generally accepted auditing standards, including those prescribed by the Auditors (Mode of Performance) Regulations, 1973, and accordingly we have applied such auditing procedures as we considered necessary in the circumstances.

In our opinion, the above balance sheet and statement of profit and loss present fairly in conformity with generally accepted accounting principles the financial position of the company as at ... and the results of its operations for the year then ended.

Pursuant to Section 109 of the Companies Ordinance, we state that we have obtained all the information and explanations we have required and that our opinion on the balance sheet and statement of profit and loss is given according to the best of our information and the explanations received by us and as shown by the books of the company.

For publicly quoted companies the last paragraph would be replaced by the following: '... and comply with the requirements of the Securities (Preparation of Financial Statements) Regulations, 1969'.

Appendix III

Uniform Text of Auditor's Report on Consolidated Statements

Auditors' report to the shareholders of...

We have examined the consolidated balance sheet of... Ltd. and its subsidiary companies as at...

and the consolidated profit and loss statement for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly we have applied such auditing procedures as we considered necessary in the circumstances.

The financial statements of consolidated subsidiary companies, whose assets comprise approximately ...% of the total assets, included in the consolidated balance sheet, and whose income comprises approximately ...% of the total income included in the consolidated profit and loss statement, were examined by other CPAs. In our opinion, based on our examination and on the reports of other CPAs as aforesaid, the above financial statements present fairly in conformity with generally accepted accounting principles, the consolidated financial position of the company and its subsidiary companies as at... and the results of their operations for the year then ended.

Shareholders' Interests and Acquisition Activity

G. D. Newbould, S. J. Stray and K. W. Wilson

The simple question we propose to answer is how shareholders are affected by the acquisition activity of their companies. The time to answer this question is uniquely appropriate because for a seven year period, beginning in 1967 and ending in 1973, acquisition activity by UK companies was at unprecedented levels. In this article the fortunes of the top 500 companies are analysed to see how their shareholders fared.

Profitability of acquisitions

Our choice of the question as to how shareholders are affected by the acquisition activity of their companies indicates our rejection of the more usual question: 'Are acquisitions profitable?'. The asking of this question has been the usual approach for economists in analysing post-acquisition situations.¹ No summary is attempted here since attempts have been numerous, the variety of approaches extensive and the results inconclusive, and in the terms in which we wish to operate there is only one relevant study, that of Reid [1] covering US companies over the period 1951 to 1961. Our basis for rejecting the usual question (and the associated articles) is that the question is incomplete. It begs the real question as to the *distribution* of 'profit' from acquisitions. Thus, with the exception of Reid, the studies are concerned with profitability in some general way, often using profitability as a proxy for 'efficiency' in the wider question of the public policy attitude to acquisitions, without saying *who* might have benefited from the acquisitions. Reid broke through this by defining interest groups. Thus it is our view that efficiency gains through acquisition activity only have a meaning when those gains are utilised. By defining interest groups (e.g. shareholders, employees, managers, consumers) the academic discussion about efficiency

is elevated into the realms of reality. 'Just who gains by acquisition activity?' is in our view the question which has significance.

While Reid did not use the expression, his idea of identifying interest groups who might have gained from acquisition activity is basically in line with the stakeholder view of the firm in managerial economics. There exist, according to this view of the firm, groups of persons who have some defined stake in the firm; shareholders have a monetary stake, employees have a job-salary stake, managers a job-salary-prestige stake, the public a consumer stake. Reid chose to work with two groups, shareholders and managers. Shareholders are interested, according to Reid, in the relative change in the market price of the ordinary shares and in increases in share of profits, whereas managers are interested principally in size of company as evidenced by increases in sales, assets and number of employees. Using such measures, and classifying companies according to whether they had carried out zero, 1 to 5, 6 to 10, or 11 plus acquisitions, Reid was able to show a negative relationship between the measures of shareholders' interests and number of acquisitions and a positive relationship between the measures of managers' interests and number of acquisitions.

Reid worked on the basis of a large sample (478 companies); two other approaches are possible. One is the case study approach which necessarily means a very limited sample size and problems in aggregating results. The other is the paired company approach; in this, one company which has grown by acquisition is compared with another which has grown internally in the same industry and from the same starting size. Using Reid's idea of interest groups with paired companies, Newbould [2] found that the acquiring companies showed increases in sales and assets (measures of managers' interests) which were statistically significantly higher than the non-acquiring companies. However, the study found no statistically significant results in respect of shareholders' interests (measured by the performance of

¹A recent survey article is M. A. Utton 'On Measuring the Effects of Industrial Mergers', *Scottish Journal of Political Economy*, Vol. XXI, No. 1, February 1974, pp. 13-28.

share price versus the *Financial Times*-Actuaries Index and by changes in earnings per share). This was perhaps because the sample size was limited to between 21 and 24 companies because of the difficulties of pairing companies.

The present study uses the large sample approach and attempts to see whether the finding of Reid that there is a negative relationship between shareholders' interests and number of acquisitions holds for the UK.²

The companies analysed

Measuring size by the capital employed shown in the balance sheet closest to 1st January 1967, the companies analysed are the largest 511 industrial and commercial companies with a registered office in the UK and a quotation on a UK stock exchange. (The unusual number, 511, was merely the outcome of the search procedure designed to ensure the capture of a minimum number of 500 companies.) The only companies excluded were financial ones because of the difficulties of comparison with industrial and commercial companies. Thus banking, insurance and finance companies were excluded, but financial trusts (that is, those practising active management of industrial and commercial companies) were left in the sample.

TABLE 1
The future of the top 511 companies

Surviving at 31st December 1973	338
Acquired by one of the 511	121
Acquired by a UK company not in the 511	25
Acquired by a non-UK company	13
Nationalised	7
Insolvency prior to being acquired by a company or by the UK Government	7
Top companies at 1st January 1967	511

On the basis of master lists of all acquisitions carried out in the UK, acquisitions made in the period 1st January 1967 to 31st December 1973 were allocated to each of the 511 companies (and their

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subsidiaries). The master lists were obtained from an earlier study [2] for the years 1967 and 1968 and from the Department of Industry for the remaining years. Both sets of data were compiled from an analysis of the financial newspapers. Then beginning on 1st January 1967 the futures of the 511 companies were traced; 338 of the 511 (i.e. only 66 per cent) companies survived for seven years. As Table 1 shows the most common form of corporate death was, appropriately enough for this study, takeover by another of the 511 companies; 24 per cent of the original sample of companies disappeared in this way.³ The 338 surviving companies are those used for analysis.

TABLE 2
Frequency of acquisition 1967 to 1973

<i>Companies Acquired</i>	<i>Number of Acquiring Companies, Exclusive Basis</i>	<i>Number of Acquiring Companies, Inclusive Basis</i>
0	102	102
1-5	167	163
6-10	36	35
11-15	20	23
16+	13	15
<i>Year</i>	<i>Companies Acquired Inclusive Basis</i>	
1967	71	
1968	156	
1969	293	
1970	195	
1971	175	
1972	221	
1973	250	
	1361	

²The same data bank is now being used to investigate whether any other relevant group (e.g. employees, managers or consumers) has gained from acquisition activity.

³As another 7 per cent were taken over by companies outside the original 511, 31 per cent of the original 511 disappeared in the seven years through acquisition activity.

Table 2 shows the frequency of acquisition. Of the 338 companies, 102 made no acquisitions in the seven years; these therefore form a substantial 'control' group against which the impact of acquisitions on shareholders' interests can be measured. Acquisitions were allotted to the 236 companies which did make at least one acquisition, on two bases: 'exclusive' and 'inclusive'. For example, Company B has acquired Companies C, D, E and F between 1967 and 1969 and in 1969 B is acquired by A, then on the exclusive basis A is credited with one acquisition; inclusively it is credited with five acquisitions. The exclusive basis counts acquisitions on a legal basis, that is, acquisitions actually made; this contrasts with the inclusive basis, which is more economic in nature in that it counts acquisitions actually made plus any acquisitions that that acquired company had made in the period from 1967 to its own demise. The reason for the inclusive basis is that if benefits to shareholders are expected to accrue from acquisitions due to synergy (the traditional view), or if extra costs are expected to accrue from acquisitions due to the problems of integrating companies and managements (an alternative view) then the inclusive count will be important. On the exclusive basis 1,280 acquisitions were made by 236 companies, inclusively 1,361 acquisitions were made by the 236. The lower part of Table 2 shows the distribution of those 1,361 acquisitions over the seven years, and *a priori* it is likely that sufficient time has elapsed to allow the main effects of the acquisitions to show up in the acquiring companies' accounts. In the lower part of Table 2, as in all subsequent tables showing the results of analyses, the inclusive method of counting acquisitions is the one used. However, *all* analyses were also carried out on the exclusive basis and this does not result in any change in any conclusion.

It will be noted that the analyses, as in fact in the Reid study, cover only frequency of acquisitions; no values are included. The Department of Industry for reasons of maintaining confidence felt unable to release values of acquired companies in the detail we required.

The acquisition boom

There is unfortunately no series of data, for either numbers of acquisitions or values of acquisitions, covering the seven years under analysis (1967 to 1973) and the preceding years.⁴ It is well documented however that there was a substantial upswing in acquisition activity in 1967 [2, 3] and reference to the

current Monitor Series M7 (started in 1970) indicates clearly that both in terms of numbers of acquisitions and values of acquisitions there was a downturn between 1973 and 1974. Without taking unnecessary space to detail this rise and fall in acquisition activity, the view expressed in 1970 and 1972 [2, 8] that acquisitions prior to 1967 were an incidental and unusual form of growth for most UK companies, and after 1966 were a major and common method of corporate growth, would appear to be accepted; this new situation lasted until 1974 and forms the basis for this article.

Shareholders' interests

To determine empirically how acquisitions affect shareholders rather than another group with interests in the company, the need is to define measures representing interests which lie closer to the heart of the typical shareholder than to the heart of the typical member of another interest group.

The first such measure we define is the rate of return obtained from the investment of money in the company's shares. This is almost wholly of concern only to shareholders. It is measured in this study as the internal rate of return obtained by a unit investment in the shares of the company on 1st January 1967 receiving seven years of interim and final dividends and selling the shares on 31st December 1973, with adjustments for rights and scrip issues at the appropriate dates.

As a subsidiary measure to this overall rate of return the capital appreciation in the value of the shares (with necessary adjustments) was computed separately. It was computed as a compound rate of growth over the seven years.

Another measure that has been computed and is fairly heavily related only to shareholders' interests is the growth in the *share* of profits that the unit investment represents. Thus in 1967 the investment 'bought' some percentage of the company's profits and this is compared with the profits belonging to that investment seven years later. The rate of growth of these profits (which is measured as a compound rate of growth) will depend not only on the growth of the company's total profits but also on any changes to the profits to the original investment through the use of shares as a means of purchasing acquisitions. (It is hoped that the sample size will diminish many of the problems in using the 'book' figure for profit.)

The fourth measure of shareholders' interests we define is the variability of the annual dividends paid over the seven years on the shares purchased. The assumption is that shareholders, *ceteris paribus*, prefer a steady to a volatile stream of dividends. The years 1967 to 1973 saw two periods of dividend

⁴See [2], Chapter 1 for discussion of the data difficulties prior to the new Monitor Series.

restraint, but since the restraint applied to all companies in the sample, no bias is expected though overall the impact may have been to produce a more stable pattern of dividends.

TABLE 3

Measures of shareholders' interests

- 1 – the overall rate of return on the investment in the company's shares
- 2 – the capital appreciation on the investment in the company's shares
- 3 – the rate of growth of the share of the profits initially 'purchased' by the investment
- 4 – the variability of the stream of dividends paid on the investment
- 5 – the variability of the stream of pre-tax net profits of the company

The final measure used is the variability of pre-tax net profits over the seven years. This is an attempt to assess the 'goodness' of the company's earnings; again with the *ceteris paribus* condition, the assumption is that the shareholder would prefer a company with a steady rather than a volatile stream of profits.

The five measures are summarised in Table 3 and they are computed for the 325 companies out of the 338 for which all data were available. The 13 companies which were left out of the final sample were omitted because of some inadequacy of the financial data available. All 13 were zero acquisition group companies, and as this group already had 89 companies the omission may not be serious.

Rate of return and acquisition activity

This section is concerned with the relationship between rate of return and acquisition activity and each of the next few sections covers one other measure of shareholders' interests in a company. A final section contains a summary of the results and our conclusions.

Perhaps the rate of return on the investment in the company's shares is the measure closest to the heart of the typical shareholder. It is the reason for investing in Company A rather than Company B or gilt-edged securities. In this section of the article the concern basically is how the rate of return to the shareholder varies when some companies chose to make no acquisitions in a seven year period while others make a few or many acquisitions.

Putting the matter more formally, the hypothesis being investigated is in line with the work of New-

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bould and Kitching [2, 4] which indicates that acquisitions are not carefully appraised before the expenditure is undertaken either in respect of the potentials and problems of the company being acquired or in respect of the needs of the company doing the acquiring. If this is the case then the acquisitions will produce a variety of outcomes. Some acquisitions will be successful, some failures, and others in between. Thus the hypothesis is that there is no relationship between the rate of return and the number of companies acquired. This is not a hypothesis one could readily support from the traditional economics and finance textbooks, which offer rational decision processes and formal budgetary procedures, but as noted it is in line with at least two empirical studies of how managers actually behave.

TABLE 4

Rate of return and acquisition activity

<i>Companies Acquired</i>	<i>Mean</i>	<i>Variance</i>	<i>N</i>
0	10.77	123.4	89
1-5	10.14	85.7	163
6-10	14.32	93.4	35
11-15	12.86	68.4	23
16+	13.89	47.0	15
All Acquisitions	11.27	85.7	236

Table 4 shows the results of the analysis in respect of the rate of return to shareholders and the numbers of companies acquired. If the hypothesis is not to be disproved there must exist no pattern in respect of the means of rate of return shown in the second column of Table 4. The means should neither decrease nor increase as one moves down the column. They do not. The absence of pattern in Table 4 relates to numbers of companies acquired being put into groups representing zero, 1 to 5, 6 to 10, 11 to 15 and 16 plus acquisitions, and it should be emphasised that during analysis both finer and more general groupings were tried as well as those suggested to us by colleagues and referees. Whatever groupings were tried no group withstood statistical testing.

In terms of the groupings shown in Table 4, routine tests of comparison of means were carried out. The Aspin-Welch [5] test for significance was used and the level of 2 per cent was adopted for the rejection of the null hypothesis of differences between two means. With six means, 11 comparisons are

useful⁵ and in no comparison could the null hypothesis be rejected – no mean was significantly different from any other.

The next stage in the analysis was a Bartlett test for homogeneity of variance which indicated that it was possible to proceed to an analysis of variance in respect of the means. An analysis of variance was carried out but the conclusion was that the means could have arisen from the same population.

Attention was then directed toward cluster analysis. The initial step is to prepare graphs relating rate of return to numbers of acquisitions, but as no clusters could be detected cluster analysis was taken no further.

A coefficient of correlation was then computed between rate of return and numbers of acquisitions but the R^2 at 12 per cent is so low as to indicate little or no association between the two variables.

One pattern which is observable in Table 4 is that the variances decline as the acquisition activity increases. This could be the outcome of a 'portfolio effect' in that companies making several acquisitions are minimising the range of expected outcomes, whereas companies with fewer or zero acquisitions have a less diverse portfolio of companies. The normal test for detecting significant differences in observed variances is the F test and again 11 comparisons are possible. However, in no case was one variance significantly higher than another so the pattern displayed in the third column of Table 4 is one which could arise by chance.

On the basis of these tests the conclusion is that there is no observable relationship between rate of return and number of companies acquired, but that conclusion can only be tentative at this stage for it is possible that other factors are clouding the observation of a relationship. Such factors could be the size of the companies involved, and the industries in which they operate.

Size of company could be an important variable since it has been investigated empirically on many occasions in relation to such factors as profitability and rate of growth (see [6] for a recent survey) but in relation to the measures being used here and with the same sample of companies, it has already been shown that there is no relationship between rate of return to shareholders and size of company [7]. As confirmation of this, Table 5 shows the mean rate of return by a cross-classification between size of company and number of acquisitions. In Table 5, no pattern is observable along rows or down columns.

TABLE 5

Rate of return, acquisition activity and size of company

Company Size	Companies Acquired				
	0	1-5	6-10	11-15	16+
£m					
0-	2.90	8.10			
5-	13.37	9.93	14.70		
10-	13.41	12.60			
15-	9.22	11.14			
20-	13.85	11.84			
25-	7.88	8.04	17.00		
50-		9.35			
75-					
100-		5.75	16.40		
150-				16.12	
250+					

Mean shown only where $N > 6$

The relationship between rate of return and the industries in which the companies operate has not been published, as was the case with rate of return and size of company, and this needs to be checked here to see if it is causing the lack of results in the basic hypothesis about rate of return and number of acquisitions. The lack of results could be caused by a chance distribution of industries throughout the activity groups, if different industries had performed differently in terms of rate of return. The 325 companies were put into the same industrial classification as used by Moodies investment services. In any empirical study there are problems with industrial groupings. Grouping by market and grouping by technology will radically alter the distribution of companies, and another problem is that almost by definition the biggest UK companies operate in several industries whether grouped by market or technology. These usual problems are perhaps less in this study because the concern is with shareholders' interests and if a company is regarded by the stock exchange as 'an engineering company', then its performance on the stock exchange will be affected by that regard. Hence the Moodies classification is useful for the analysis of rate of return. Table 6 shows the mean rate of return by industry groups for any industry group containing seven or more com-

⁵The useful comparisons are all possible combinations of the groups 0, 1-5, 6-10, 11-15 and 16+ and a comparison between 0 and 'All Acquisitions'.

TABLE 6
Rate of return and industry group

<i>Industry Group</i>	<i>Mean</i>	<i>Variance</i>	<i>N</i>
Commodities & Overseas Trade	28.06	99.2	9
Shipping	16.38	196.3	11
All Other	12.58	72.8	61
Brewing	12.61	9.3	12
Industrial Holdings	12.17	62.8	27
Electronics & Radio	12.01	125.2	9
Stores	12.00	92.5	23
Textiles	11.56	91.3	12
Contracting & Construction	11.49	61.6	8
Food Manufacturing	10.65	26.4	25
Newspapers & Publishing	10.13	62.2	9
Engineering	9.48	66.6	49
Chemicals	9.18	71.1	12
Electricals	8.48	211.7	11
Motors & Distributors	8.24	101.8	14
Building Materials	8.23	74.2	19
Packaging & Paper	4.66	80.8	7
Machine Tools	-1.01	148.4	7

panies. The remaining companies are grouped into the 'All Other' category.

It is immediately apparent from Table 6 that the mean rate of return differs greatly between industry groups. Formal testing, using the Aspin-Welch method, established that this was statistically so. Table 7 shows which groups gave a higher rate of return than other groups when the 2 per cent level of

significance was adopted for the rejection of the null hypothesis. There are 153 possible comparisons and 21 proved significant. The results can be summarised generally as Commodities & Overseas Trade having given a high rate of return and Machine Tools having given a low rate of return. These two industry groups therefore need to be related back to Table 4 showing rate of return and number of acquisitions. A simple way of doing this is to look at the distribution of the companies in these two industry groups over the acquisition activity groups. This distribution is shown in Table 8; the means of Table 4 were then recalculated omitting these industry groups but conclusions already reached in respect of Table 4 were not altered. Other analyses were tried including looking at rate of return and acquisition activity within each industry group, but still no conclusions were changed.

In this section the relationship between rate of return and number of companies acquired has been

TABLE 7
Industry groups with significantly higher rates of return

Commodities & Overseas Trade significantly higher than:

every other industry group except Shipping, Brewing, Shipping, Industrial Holdings, Stores, All Other significantly higher than:

Machine Tools.

TABLE 8
Significant industry groups and acquisition activity

<i>Companies Acquired</i>	<i>Commodities & Overseas Trade</i>	<i>Machine Tools</i>	<i>Brewing</i>	<i>Shipping</i>	<i>Engineering</i>	<i>Industrial Holdings</i>	<i>N</i>
0	3	2	5	6	12	5	89
1-5	4	5	4	3	30	13	163
6-10	1	0	2	1	4	5	35
11-15	1	0	1	1	2	2	23
16+	0	0	0	0	1	2	15
	<u>9</u>	<u>7</u>	<u>12</u>	<u>11</u>	<u>49</u>	<u>27</u>	<u>325</u>

examined. In addition, size of company and industry group were checked for their impact on this relationship. The conclusion after extensive statistical work is that there is no observable relationship between rate of return to shareholders and the number of companies acquired. Comment on this finding is held over until the results of the other measures of shareholders' interests have been presented.

Capital appreciation and acquisition activity

While capital appreciation on shares, as a measure of shareholders' interests in a company, is a major component of rate of return, it is possible that it could behave differently to rate of return. A hypothesis relating capital appreciation and the number of acquisitions the company makes is that there will be a positive relationship. This positive relationship may arise simply from the additional publicity or glamour surrounding the actively-acquiring company on the stock exchange. The results for capital appreciation are shown in Table 9.

Table 9 follows the construction of Table 4 and shows means and variances for capital appreciation for each acquisition activity group. The hypothesis requires that the means increase as the acquisition activity increases. This pattern is not present in Table 9. The means were compared statistically; of 11 meaningful comparisons one was found to be significant. The 6 to 10 group was significantly higher than the 1 to 5 group at the 2 per cent level, but that isolated result does not form any basis for confirming the hypothesis. Further tests were carried out, exactly as in Table 4, but the means showed no pattern, nor was clustering apparent, and a correlation calculation between capital appreciation and number

of companies acquired produced an R^2 of only 10 per cent. The variance, it will be noted from Table 9, does decline as acquisition activity increases but the F test showed no one variance to be significantly greater than any other and thus the pattern could arise by the vagaries of the sampling procedure.

Capital appreciation is thus identical with rate of return in terms of results: there is no observable relationship between capital appreciation and numbers of companies acquired. However, it must again be checked whether there is a co-variation with the additional factors of size of company and industry group. The relevant tables are given in the appendix. Table A1 is equivalent to Table 5 and shows capital appreciation by a cross-classification of acquisition activity and size of company. Even though a very weak relationship has been observed between capital appreciation and size of company [7], the relation-

TABLE 9
Capital appreciation and acquisition activity

<i>Companies Acquired</i>	<i>Mean</i>	<i>Variance</i>	<i>N</i>
0	5.04	106.4	89
1-5	3.40	88.3	163
6-10	7.62	76.2	35
11-15	5.65	55.8	23
16+	7.10	49.4	15
All Acquisitions	4.49	83.8	236

ship is so weak that in Table A1 no pattern is observable. Table A2 is equivalent to Table 6 and shows capital appreciation for each industry group. As in Table 6, Commodities & Overseas Trade and Machine Tools stand out as the highest and lowest respectively. Commodities & Overseas Trade is consistently high, as formerly, and these facts are detailed in Table A3. As before, feeding the results of this table back into the major table (Table 9) did not change the conclusions.

The conclusion of this section is that there is no observable evidence to support the hypothesis that acquisition activity in the longer term enhances the share price of the company. Again, comment is withheld until the final summary below.

Growth of share of profit and acquisition activity

Rate of return and capital appreciation as measures of shareholders' interests are intimately concerned with the stock market's reaction to the company. It could be argued that the lack of results so far could merely be indicative of the normal randomness of stock market behaviour. This argument has no validity for the current section, for here the analysis is of an item in the published accounts of the company rather than any reaction to published information. The analysis here concerns the rate of growth of share of profit. The initial investment on 1st January 1967 entitled the shareholder to a given percentage of the company's profits. His profits will grow as the company's profits grow but not *pari passu*. One difference that can arise is when the company uses ordinary shares to purchase other companies; if the terms are not right the equity could be diluted and the shareholder's share of profit will lag behind the overall profit of the company. However, while the temptation will exist from time to time for the acquiring company to dilute its equity in order to take over a particular company, there is a maxim in the City that a company should not buy with shares a company whose shares stand on a price/earnings ratio higher than its own. If the maxim is followed each acquisition will give an increment to earnings per share to *existing* shareholders. Over time, this should produce a positive relationship between rate of growth of share of profit and number of acquisitions. Based merely on the strength that this maxim has in the City, the hypothesis is that this positive relationship will exist.

The equivalent of Table 4 and Table 9, but in respect of rate of growth of share of profit, is Table 10. Even though the analysis now concerns 'hard' data, rather than reactions to data, there is no pattern in the column showing the means for rate of growth of

TABLE 10
Growth of profit and acquisition activity

<i>Companies Acquired</i>	<i>Mean</i>	<i>Variance</i>	<i>N</i>
0	12.24	108.2	89
1-5	13.66	207.9	163
6-10	12.74	48.8	35
11-15	15.89	63.9	23
16+	14.73	45.4	15
All Acquisitions	13.81	176.8	236

profit. (It is perhaps as well to issue the reminder at this point that finer and more general groupings were tried in addition to any shown in tables.) The next step was to test the means – none was significantly different to any other. A Bartlett test on the variance figures indicated that the variances did not come from the same population which precluded an analysis of variance. No clusters were apparent to suggest the use of one of the techniques of cluster analysis. A correlation between rate of growth of share of profit and number of companies acquired showed an R^2 of 7 per cent.

Previously the observed variances have shown a pattern (though it was not significant on statistical testing) but even that observed pattern has now been lost. It is necessary to note in passing, however, that on an F test the variance of the 1 to 5 group is significantly greater at the 2 per cent level than the variance for each other group. This is not the basis of any hypothesis so it must be regarded as an isolated result.

In the absence of results it is wise to check again on the impact of size of company and industry grouping. Appendix Table A4 shows the mean rates of growth of share of profits by a cross-classification of size of company and acquisition activity. No patterns are observable.⁶ Rate of growth of share of profit by industry group is shown in Table A5. Machine Tools has preserved its place at the foot of the table but Shipping is now at the head. Tests of significance between the means for each industry group indicate that Shipping and Commodities & Overseas Trade are in general higher than other industry groups and

⁶In the article referred to on size and shareholders' interest [7], the analysis covered rate of growth of profit, not rate of growth of *share* of profit. The whole has been repeated to confirm the lack of relationship.

TABLE 11
Variability of dividends and acquisition activity

<i>Companies Acquired</i>	<i>Correlation Coefficient</i>	<i>Fisher Z Transformation</i>	<i>N</i>
0	0.7267	0.9216	89
1-5	0.7646	1.0125	163
6-10	0.8477	1.2479	35
11-15	0.8768	1.3616	23
16+	0.8126	1.1348	15
All Acquisitions	0.7909	1.0735	236

Machine Tools and Engineering lower than many others (see Table A6). Again, various checks to delineate the impact of such results in Table 10, including simple elimination, did not produce patterns or significant results in the classification of rate of growth of share of profit by acquisition activity groups.

The conclusion is that there is no observable relationship between the rate of growth of share of profit and number of companies acquired.

Variability of dividends and acquisition activity

Our fourth measure of shareholders' interests is the variability of dividends. The hypothesis is based on the possible portfolio effect of acquisition activity. When one company purchases another the effect may be to smooth fluctuations in its own earnings or dividends. The extent to which fluctuations will be smoothed is determined by the usual factors in portfolio analysis: the size of the addition to the portfolio compared with the existing size of the portfolio and the degree of co-variation between the actual outcomes of the addition and the actual outcomes of the existing portfolio.⁷ Here, the concern is with dividends and the hypothesis is that the more actively acquiring companies will have a smoother dividend stream.

The method of analysis is not so obvious as in previous sections. Here, the requirement is to take a company which has paid seven yearly dividends and construct a measure of variability of dividends which will allow this company to be aggregated with others

having a similar number of acquisitions, and by taking these companies together, to be able to compare them with another group of companies. The method chosen was to compute for each company a coefficient of correlation between dividends and time. These were then averaged for the companies in a particular acquisition activity group. The mean coefficient of correlation was transformed into a Fisher Z coefficient. The Fisher Z coefficients were then compared with each other.

Table 11 shows the mean coefficients of correlation and the associated Fisher transformation for each of the acquisition activity groups in respect of variability of dividends. There is nearly a pattern: the lowest coefficient of correlation (that is greatest variability of dividends) occurs in the no acquisitions group and the coefficients are monotonic up to the 16 plus acquisitions group, where there is a fall. The advantage of the Fisher Z transformations, shown in the third column of Table 11, is that they, unlike the coefficients of correlation, can be the subject of a formal statistical hypothesis. The hypothesis adopted is to test whether the coefficients represent populations having the same true value. Unfortunately, on this test, with a rejection level of 2 per cent, it was not possible to reject this null hypothesis – the Fisher Z transformations could come from populations having the same true value and hence we conclude that the observed coefficients of correlation do not differ from each other.

Thus, at this stage, the variability of dividends is equal no matter whether the company has undertaken no acquisitions or one or more acquisitions. It is still possible of course that a relationship does exist and, as before, the two most likely factors to obscure the observation of any real relationship are size of company and industry grouping. As noted in previous sections, the impact of size of company has been

⁷This reasoning is similar to that noted in connection with the apparent, but not significant, reductions in observed variances in Table 4.



TABLE 12
Variability of dividends and industry group

<i>Industry Group</i>	<i>Correlation Coefficient</i>	<i>Fisher Z Transformation</i>	<i>N</i>
Commodities & Overseas Trade	0.9561	1.8992	9
Contracting & Construction	0.9551	1.8872	8
Brewing	0.8817	1.3835	12
Stores	0.8738	1.3490	23
Electricals	0.8430	1.2312	11
Electronics & Radio	0.8334	1.1989	9
All Other	0.7914	1.0749	61
Food Manufacturing	0.7841	1.0557	25
Industrial Holdings	0.7830	1.0528	27
Motors & Distributors	0.7621	1.0010	14
Chemicals	0.7507	0.9745	12
Engineering	0.7444	0.9606	49
Packaging & Paper	0.7362	0.9424	7
Shipping	0.6957	0.8595	11
Building Materials	0.6615	0.7957	19
Newspapers & Publishing	0.6395	0.7572	9
Machine Tools	0.6192	0.7237	7
Textiles	0.6169	0.7200	12

investigated elsewhere [7] and it is only necessary to report here that for this sample of companies the null hypothesis about the coefficients of correlation for differing sizes of company could not be rejected. The impact of industry group is evidenced in Table 12. The observed coefficients of correlation do vary, from 0.9561 for Commodities & Overseas Trade which indicates great stability of dividend payments, down to 0.6169 for Textiles indicating a much less stable pattern of dividends. The Fisher Z transformations for each coefficient of correlation were compared but in no comparison could the null hypothesis be rejected. With this result, that the observed results in Table 12 could come from populations having the same true value, the conclusion reached on Table 11 need not be changed. The conclusion is that there is equal variability of dividends in each acquisition activity group.

Variability of profits and acquisition activity

The final measure of shareholders' interests we have chosen to define is the variability of pre-tax net profits. This is a measure of the 'goodness' of the earnings on the assumption that a shareholder would prefer, *ceteris paribus*, a company with a steady rather than a volatile stream of profits. The hypothesis to be tested is similar to that used in connection with the variability of dividends, that a company by means of acquisitions can achieve a smoother stream of pre-tax net profits.

The method of testing is identical to the previous section: the mean coefficient of correlation for each acquisition activity group is calculated and transformed into a Fisher Z coefficient. Both coefficients are displayed in Table 13. Again a pattern is almost there; only one group (11 to 15 acquisitions) breaks

TABLE 13
Variability of profits and acquisition activity

<i>Companies Acquired</i>	<i>Correlation Coefficient</i>	<i>Fisher Z Transformation</i>	<i>N</i>
0	0.7145	0.8960	89
1-5	0.8078	1.1208	163
6-10	0.8578	1.2846	35
11-15	0.8468	1.2554	23
16+	0.8937	1.4395	15
All Acquisitions	0.8245	1.1705	236

a monotonic series. However, the null hypothesis in respect of the Fisher Z transformations could not be rejected at the 2 per cent level for any comparison and the conclusion must be that the apparent relationship between the correlation coefficients could have arisen by chance.

The impact of size of company on variability of profits for these companies has been examined [7] and, as here, the null hypothesis could not be rejected, indicating that variability of profits was as great for small as for large companies. Size is not therefore considered here to be an important variable. Industry group could have an impact upon Table 13, and it is therefore necessary to compute the correlation coefficients and Fisher Z transformations for each industry group. These are shown in Table 14. The observations for each industry group do vary but a test of statistical significance indicated that in only three comparisons out of a possible 153 could the null hypothesis be rejected at the two per cent level. These three arose in the case of Brewing versus Engineering, Textiles and Machine Tools, in each Brewing being significantly higher. Since the numbers of companies involved in Brewing is small (12) it is unlikely that their elimination would change the results of Table 13. Table 8 showed the distribution of significant industry groups over acquisition activity groups and calculations showed that Brewing did not materially affect Table 13, nor did Engineering for though it contains 49 companies these were fairly proportionately spread over all the acquisition activity groups. Table 13 is therefore unaltered and shows no differences in variability of pre-tax profits as between companies making differing numbers of acquisitions.

Summary

No study can take proper account of all the factors necessary to reach unalterable conclusions and in

seeking relationships between shareholders' interests and acquisition activity this study has attempted to include the influence of the factors of size of company and industry group. Even so at least two weaknesses remain.

The first is that the whole analysis has been in terms of numbers of acquisitions and while Reid's findings for the USA were based upon numbers of acquisitions, it is possible that had our analysis been conducted in terms of values of acquisitions, the results would have given rise to different conclusions.

The second weakness is the basic one in any empirical study; no knowledge exists of what would have happened in the absence of what did occur. If Company A had not made 20 acquisitions during the period 1967 to 1973, would it have been worse or better on the measures we have been using? While clearly our choice of the large sample approach in which there were 89 companies making no acquisitions and 236 companies each making some number of acquisitions (which totalled nearly 1,400) is a statistical way of isolating the true influences being sought, it is necessary to look at this problem further. A mandatory lecture in business policy courses covers 'gap analysis'. If a company perceives its performance falling short of its targets, the company buys another to fill the gap. It is possible to argue from this that the results we have obtained, indicating that acquiring companies are no different from zero-acquisition companies, merely prove the existence of successful gap analysis and in the absence of the purchase of acquisitions, our results would have shown acquiring companies as *inferior* to zero-acquisition companies. For this explanation of our results to be true it requires:

- (i) that directors carry out gap analysis (explicitly or intuitively);
- (ii) that directors' decisions are correct – in the

TABLE 14
Variability of profits and industry group

<i>Industry Group</i>	<i>Correlation Coefficient</i>	<i>Fisher Z Transformation</i>	<i>N</i>
Brewing	0.9574	1.9148	12
Commodities & Overseas Trade	0.9043	1.4952	9
Contracting & Construction	0.8844	1.3954	8
Stores	0.8571	1.2820	23
Building Materials	0.8365	1.2091	19
Motors & Distributors	0.8229	1.1657	14
Industrial Holdings	0.8194	1.1552	27
Electricals	0.8068	1.1180	11
All Other	0.8053	1.1138	61
Food Manufacturing	0.8003	1.0998	25
Electronics & Radio	0.7988	1.0956	9
Chemicals	0.7818	1.0497	12
Newspapers & Publishing	0.7389	0.9478	9
Shipping	0.7352	0.9404	11
Engineering	0.7315	0.9323	49
Packaging & Paper	0.7009	0.8688	7
Textiles	0.6403	0.7585	12
Machine Tools	0.3483	0.3633	7

case of the zero-acquisition companies, that there was no gap to be filled by acquisitions, and in the case of acquiring companies, that the gap was successfully filled by acquisitions;

and further in the case of acquiring companies,

(iii) that whatever the numbers of acquisitions undertaken, the result brought the companies just up to and not below or beyond the level of the zero-acquisition companies.

These requirements are quite onerous and since the existing empirical evidence indicates:

- (i) that acquisitions are not normally part of a rational economic process;
- (ii) that pre-acquisition analysis of what the acquirer needs and the to-be-acquired offers is often minimal;
- (iii) that after the purchase both pleasant and unpleasant facts are discovered; and
- (iv) that the chances of success are about even [2, 4]

the burden of proof is put on to those proposing gap analysis as the reason for our lack of relationship between shareholders' interests and acquisition activity.

Even at their face value, the results of this study have some importance, for having defined five measures of company performance which lie closer to the heart of the typical shareholder than to the heart of a typical member of another interest group, we cannot distinguish on those measures between companies which have made no acquisitions and companies which have made a few acquisitions or either of those groups of companies and companies which have made many acquisitions. Thus the measures of rate of return on shares, capital appreciation of shares, rate of growth of profit to shareholders at the start of the period, variability of dividends and variability of pre-tax net profits apparently do not differ between companies which have, over a seven year period, made zero, 1 to 5, 6 to 10, 11 to 15 or 16

plus acquisitions. The implications are, as far as shareholders are concerned, that it is of no moment to them whether companies grow purely by internal expansion, by moderate acquisition activity or by great acquisition activity. In this respect the acquisition boom of 1967 to 1974, which just in terms of our starting sample accounted for 24 per cent of the companies being taken over *within* the sample, was irrelevant to shareholders.

If one accepts our results at more than their face value (particularly that in dealing with a large sample the coincidences required by the gap analysis argument are unlikely to offer an alternative explanation) then the implications are striking. Managers' decisions in relation to the growth strategy of the company had no impact on shareholders' rate of return, capital appreciation in share price, rate of growth of profit going to existing shareholders, variability of dividends and variability of pre-tax net profits. On average, managers' decisions, whether to take over no companies or to take over some or many, neither improved nor worsened the position of their shareholders. This means that their decisions could well have been made, with equal effect upon their shareholders, by some random process of deciding the growth strategy of the company – to grow by internal expansion or by acquisition – and then by some random process of selecting the number of acquisitions once that growth strategy had been selected.

If one bears in mind that the opening sample consisted of the largest 511 quoted companies, controlling between them the bulk of the UK's private sector assets and employment, the results of this study are important. It appears fairly clear that shareholders' interests are not affected whether companies grow internally or by acquisition activity, and it is likely that managers' decisions on acquisitions are, as far as shareholders are concerned, akin to a random variable. The need now is to find if another interest group has gained from the acquisition boom.

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Appendix

TABLE A1
Capital appreciation, acquisition
activity and size of company

Company Size	Companies Acquired				
	0	1-5	6-10	11-15	16+
£m					
0	-3.54	1.49			
5	7.97	4.53	6.60		
10	6.67	5.16			
15	4.02	4.60			
20	7.84	5.54			
25	2.64	0.85	11.31		
50		1.99			
75					
100		-1.07	9.82		
150					6.67
250+					

TABLE A2
Capital appreciation and industry group

<i>Industry Group</i>	<i>Mean</i>	<i>Variance</i>	<i>N</i>
Commodities & Overseas Trade	21.20	109.9	9
Contracting & Construction	7.27	64.5	8
Brewing	7.16	9.5	12
Shipping	6.88	145.9	11
Stores	6.82	83.6	23
Electronics & Radio	6.67	133.3	9
All Other	6.04	63.5	61
Industrial Holdings	5.30	62.7	27
Textiles	4.71	116.8	12
Food Manufacturing	4.61	29.1	25
Newspapers & Publishing	4.31	72.4	9
Chemicals	3.94	76.2	12
Electricals	2.79	167.3	11
Engineering	2.21	55.4	49
Building Materials	1.74	63.0	19
Motors & Distributors	1.11	95.6	14
Packaging & Paper	-3.18	116.7	7
Machine Tools	-7.93	83.9	7

TABLE A3
Industry groups with significantly higher capital appreciation

Commodities & Overseas Trade significantly higher than:

every other industry group.

Brewing, All Other significantly higher than: Engineering.

Brewing significantly higher than: Building Materials.

Engineering, Industrial Holdings, Food Manufacturing, Stores, Brewing, Chemicals, Shipping, Electronics & Radio, Contracting & Construction, All Other significantly higher than:

Machine Tools.

TABLE A4

Growth of share of profits, acquisition activity and size of company

<i>Company Size</i>	<i>Companies Acquired</i>				
<i>£m</i>	<i>0</i>	<i>1-5</i>	<i>6-10</i>	<i>11-15</i>	<i>16+</i>
0	6.94	17.35			
5	10.99	13.03	9.08		
10	15.61	10.07			
15	13.96	14.76			
20	14.59	18.36			
25	14.05	10.17	18.48		
50		20.59			
75					
100		10.97	13.37		
150				17.22	
250+					

TABLE A5

Growth of profits and industry group

Industry Group	Mean	Variance	N
Shipping	29.30	232.33	11
Commodities & Overseas Trade	24.22	88.21	9
Motors & Distributors	19.00	739.17	14
Contracting & Construction	18.10	224.26	8
Packaging & Paper	17.64	373.15	7
Industrial Holdings	15.84	126.65	27
Electronics & Radio	15.51	95.98	9
Building Materials	15.44	47.25	19
Textiles	14.46	136.26	12
Stores	12.41	103.30	23
All Other	12.23	99.05	61
Brewing	11.44	15.67	12
Chemicals	10.91	19.14	12
Engineering	10.48	70.95	49
Newspapers & Publishing	4.62	27.43	9
Food Manufacturing	9.25	47.44	25
Electricals	8.83	106.60	11
Machine Tools	1.57	82.93	7

TABLE A6

Industry groups with significantly higher rates of growth of share of profit

Commodities & Overseas Trade significantly higher than:

Engineering, Food Manufacturing, Stores, Brewing, Chemicals, Electricals, Newspapers & Publishing, Machine Tools, All Other.

Shipping significantly higher than:

Engineering, Food Manufacturing, Stores, Building Materials, Brewing, Chemicals, Textiles, Electricals, Newspapers & Publishing, Machine Tools, All Other.

Industrial Holdings, Stores, Building Materials, Brewing, Textiles, Electronics & Radio, Contracting & Construction, All Other significantly higher than:

Machine Tools

Industrial Holdings, Building Materials significantly higher than:

Food Manufacturing

Building Materials significantly higher than:

Engineering.

Walter Taplin Prize

The Association of University Teachers of Accounting and the Council of Departments of Accounting Studies offer an annual prize of £10 for the best article published in *Accounting and Business Research*. The prize is to be awarded for the first time in respect of Vol. 6 (Nos. 21/24) 1975-76. The winning article will be chosen by the subscribers.

The prize is named in honour of the journal's founding editor, Walter Taplin.

The Nature of Redundancy and Its Use in Company Reports and Accounts

Niall Lothian

Readers will no doubt be familiar with the first objective of the Trueblood Report: 'The basic objective of financial statements is to provide information useful to making decisions.'¹ This statement is elemental and unambiguous – some may even feel that the assertion that financial statements should be user-oriented is trite.² However the Study Group extended this initial objective with the following remarks: 'To accomplish this basic objective, it may be that financial statements should not be limited solely to quantified information. Amplification, in narrative form, of data included in statements may be required'.³ These remarks have been overlooked by so many writers in the area of financial reporting that one is forced to question the wisdom of the Report's draftsmen in picking out the objectives in bold type – the power of the small print should never be underestimated! This article examines one implication of the Study Group's enlargement on their first objective, the need for redundancy in financial statements.

What redundancy is

The term 'redundancy' means superfluity, or excess. In the economic and political arena the word is used synonymously with 'unemployment' and consequently has an everyday meaning which has distinct socially undesirable overtones. This is unfortunate from the communications point of view where the word redundancy is used to mean 'repetition' or 'additional data', both terms being important features in communication theory. Not unnaturally, it is difficult for the reader who comes to the study of communication theory for the first time to make

the necessary interpretative gear-change from a concept which is unacceptable and which, we are told, should be avoided, to one which can be seen as being useful and which, in some circumstances, should be positively sought after.

Redundancy is an essential property of language, both spoken and written.⁴ It provides benefits because the repetition of all or part of a message guards against misinterpretation. A speaker says 'Let me put that another way' or 'in other words', and he then proceeds to repeat the content of his message all over again. When we write a cheque we deliberately introduce redundancy by spelling out the sum of money involved. We also spell out numbers on telegrams; although we are increasing the cost of transmission we are decreasing the possibility of error, since the spelled-out forms have redundancy, and the arabic symbols have not.⁵ During the war, when meteorological information was passed to air stations, the items of information most vital to air safety were repeated in a different form in order to give the receivers a means of checking the accuracy of the information. Redundancy was deliberately introduced because it was thought to be useful to the decision-maker.

Clearly not all redundancy is necessary or helpful: imagine a word index to a dictionary! One author illustrates needless repetition by space jargon like 'A-OK all systems go'. He suggests that this is possibly due to the fact that the equipment itself has so many back-up systems to prevent partial success.⁶

Can we escape from redundancy?

Redundancy guards against misinterpretation. Virtually everything that we read and speak contains

¹Report of the Study Group on the Objectives of Financial Statements, *Objectives of Financial Statements*, American Institute of Certified Public Accountants, 1972, p. 13.

²Report of the Committee on Concepts and Standards for External Financial Reports, 'Objectives of Financial Statements: An Evaluation', *Accounting Review*, Supplement to Volume XLX, 1975, p. 42.

³Report of the Study Group, op. cit., p. 13.

⁴P. Farb, *Word Play: What Happens When People Talk*, Jonathan Cape, 1973, p. 273.

⁵R. Quirk, 'Colloquial English and Communication', in *Studies in Communication*, Communication Research Centre and Martin Secker and Warburg, 1955, p. 179.

⁶P. Farb, op. cit., p. 125.

redundant elements in it because we feel that our audience will benefit by the repetition which we build into our messages. Redundancy is necessary because we are aware of the inherent difficulties of language, our inability to put across our message, and the inadequacies of our audience who are operating in an environment of uncertainty.

It has been suggested by Cherry that it is impossible to strip a statement of all redundancy.⁷ Although redundancy is, in effect, a form of addition, a larger number of instructions being sent out than is barely necessary, it is extremely difficult to determine what the bare bones of a message are. We cannot say what elements may be stripped off a given text before the message will fail to be conveyed to the recipient, because our recipient has an enormous knowledge of language habits and conventions: 'He knows rules of spelling, word orders, grammar, idioms and clichés; again he knows typical vocabularies and phraseology which are used for specific subject matters, and he can predict to some extent from his knowledge of topics or of the writer's point of view.'⁸

Thus, however bare the bones of a message become, the recipient may be able to guess the rest of it, provided sender and receiver are aware of the context. A mundane analogy of this situation is a crossword puzzle where the composer endeavours to reduce his clues to a point of zero-redundancy, but no further, or the reader will be unable to complete the puzzle. In other words (*sic*) we cannot deny the existence of redundancy in communications; we are unaware, however, how much redundant information there is in any given communication.

Redundancy and accounting

As the first objective of the Trueblood Report reveals, accounting is undeniably in the communications business. Accounting provides, or communicates, information to decision-makers. According to Goldberg, so much of accounting activity is oriented, directly or indirectly, towards the communication of information that it is scarcely an exaggeration to say that the problem of communication is the axial problem in accounting.⁹ He condemns accounting writers for paying so little attention to communication theory. Two notable exceptions to Goldberg's

stricture are Chambers¹⁰ and Bedford,¹¹ both of whom discuss briefly the problem of redundancy in accounting.

Chambers distinguishes between natural language and technical language. Technical language seeks to avoid mistaken responses by definition of the terms used: 'And, generally, the forms in which (technical) statements are expressed are such that a given message requires fewer signs than an equivalent statement in a natural language. Both definition and form tend to the elimination of redundancy, to economy in the use of terms . . .'¹² Chambers then considers a balance sheet as a message cast in a specific form. He states that the familiarity of the reader to such messages enables abbreviation to be adopted by the sender of the message: for example, instead of stating 'There was, at the stated balance sheet date, a sum of £1,000 in currency, or bank deposits, in possession of the entity', we can abbreviate the message to 'cash £1,000'.

The problem of definition

While it is easy to agree that accounting is a technical language (some even consider that 'technical language' is a euphemism for jargon), it is difficult to appreciate how accountants and the users of their information can agree on the definitions of terms used (as Chambers implies) when the accounting profession cannot even agree among themselves what particular terms mean. Admittedly the ASSC is attempting to control the self-service supermarket of 'acceptable' terms which are so freely available by including in most published standards a section entitled 'Definition of Terms'. But it is naive to believe either that the Steering Committee can enforce agreement on what terms mean or that there can ever be agreement on the definition before there is agreement on the thing itself. Goldberg recognises how limiting a definition is when attempting an analysis of a phenomenon: 'A definition erects a wall around a field of discussion and, if one does not agree with the definition presented, one often finds oneself outside the wall, shut out from at least a large part of the discussion; alternatively, if one agrees in part with the definition, one may find oneself shut inside the wall with no means of getting out or even of obtaining a view of the country which lies outside.'¹³

⁷C. Cherry, *On Human Communication*, MIT Press, 1957, p. 115.

⁸Ibid., p. 116.

⁹L. Goldberg, *An Inquiry into the Nature of Accounting*, American Accounting Association, 1965, p. 348.

¹⁰R. J. Chambers, *Accounting, Evaluation and Economic Behavior*, Prentice-Hall, 1966, especially chapter 8.

¹¹N. M. Bedford, for example, *Income Determination Theory - An Accounting Framework*, Addison-Wesley, 1966, chapter 12.

¹²R. J. Chambers, op. cit., p. 174.

¹³L. Goldberg, op. cit., p. 25.

In this context it is regrettable that Chambers selected cash as his example of an easily understood, abbreviated message since cash is perhaps the least ambiguous and least controversial item which appears on the face of financial statements. One wonders if the elimination, or minimisation of redundancy in the following abbreviations leaves the user in the same condition of understanding: 'goodwill', 'investment grant equalisation reserve', 'deferred liability', 'funded debt', and so on.

Variations on a theme

The other distinctive feature of technical language statements described by Chambers is the specific and recognised form in which the message is conveyed: in accounting terms, the profit and loss account and balance sheet. These terms are familiar to the user of financial statements but it is by no means certain that the numerous variations on the same layout theme are understood so readily by the user. Table 1 gives the descriptive subtitles which can be found in the published accounts of *The Times* Top 100 Industrial Companies 1974/75.

Such distinctions in terminology can easily be dismissed as trivial and insignificant by accountants and other professional financial users; what has not been determined, however, is the confusion which may be created in the minds of other less financially sophisticated users of company statements by the semantic inventiveness of company financial directors and their auditors.¹⁴ And Table 1 only considers the variations in terminology of what used to be called 'assets and liabilities'; there are many other terms in annual reports which lend themselves to kaleidoscopic interpretation, for example, sources and uses of funds, profit available for distribution, the treatment of current liabilities, shareholders' funds, and so on. The second objective of the Trueblood Report recognises that financial statements are especially important to those who have limited access to information and limited ability to interpret it.¹⁵ The accounting profession's creative powers with their terminology do not assist in forming a recognisable and consistent technical language which is essential for the user with limited interpretative capacity.

Words and numbers

Bedford points out how carefully accounting reports have to be read. This is because they are reported in number symbols: 'The problem with numbers is that overlooking one digit of a number completely changes the meaning of the information. Words do not have this precise meaning and, in fact, often take their meaning from the content of the sentence and paragraph in which they are used. Thus a reader may skip a word in a report and still grasp the meaning of the report'.¹⁶ Readers of financial statements do not realise how accurately they should be read; redundancy, according to Bedford, may have to be introduced into accounting reports.

In summary, therefore, the accounting profession is apparently faced with a number of problems, all of which lead us to an unqualified agreement with the Trueblood Report's observation that in order that financial statements provide the decision-maker with useful information we may require to amplify such statements with additional data. These problems we have seen to be:

1. Lack of consistent terminology, which leads to non-agreement both *within* the accounting profession and *between* the profession and the users of financial statements,
2. Inconsistent lay-out and presentation of the traditional financial statements,¹⁷
3. The concentration required by the user to read the statements which are predominantly in number form, and,
4. That financial statements are especially important to those who have limited access to information and limited ability to interpret them.

The recognition of these problems, together with the acceptance that the basic objective of financial statements is to communicate useful information, suggests that a study of published company reports and accounts would be a useful exercise in order that the existing degree of redundancy may be determined and so that, with further research, we may be in a position to recognise fresh areas of business activity, information about which users of company reports would benefit.

¹⁴Survey of Published Accounts 1973/74, published by the General Educational Trust of the Institute of Chartered Accountants in England and Wales, describes the variations depicted in Table 1 as follows: "The two totals often have descriptive titles such as 'capital employed' and 'net assets employed': in other cases there is no title for the lower half but it is indicated by a connecting phrase such as 'represented by' or, 'financed by'". (p. 263).

¹⁵Report of the Study Group, op. cit., p. 17.

¹⁶N. M. Bedford, op. cit., p. 204.

¹⁷The specific conclusions drawn from Table 1 are supported in general by *The Corporate Report* (Accounting Standards Steering Committee, 1975): 'Annual Corporate Reports . . . were [at October 1974 when the working party started work] produced in many forms. There was virtually no limit to the quantity of information which could be disclosed if so wished by the reporting organisation and few rules concerning presentation' (paragraph 4.4).

TABLE 1

Variations of descriptive sub-titles in group balance sheets in *The Times* Top 100 Industrial Companies^{1, 2}

A			
	Capital Employed	=	{ Employment of Capital ³ Use of Capital Net Assets Employed Net Assets Represented by
B			
	Financed by	=	{ Capital Employed ⁴ Net Assets Employed Net Assets Assets Employed (blank)
	Financed as follows	=	{ Assets Assets less Liabilities
C			
	Funds Employed	=	{ Employment of Funds ³ Net Assets Assets Employed
	Total Funds Employed	=	{ Total Net Assets Employed (blank)
D	Sources of Funds	=	{ Funds Employed ⁵ Employment of Funds
	Sources of Capital	=	{ Assets Employed Employment of Capital
	Sources of Finance	=	Invested in
E	Stockholders' Interest	=	Net Assets
	Ordinary Stockholders' Funds	=	Represented by
F	Double-sided (horizontal) Form		
G	(Blank)	=	Net Assets
	Representing	=	Assets Employed
	Provided from	=	(blank)

Notes

¹ Source for list of companies: *The Times* 1000 1974/75 (capital employed ranking).

² Of the 28 variations listed, 13 were found in the top 18 companies.

³ It is difficult to appreciate the distinction between the two sides of these popular variations.

⁴ Brooke Bond Liebig interpret 'Capital Employed' as meaning the exact opposite to all other companies using the expression (see Group A).

⁵ British and Commonwealth Shipping interpret 'Funds Employed' as meaning the exact opposite to all other companies using the expression (see Group C).

Redundancy by regulation

We can consider redundancy in published accounts under two main headings, regulatory and voluntary. The regulations to which we refer are both statutory and institutional:

1. The Companies Acts 1948 and 1967,
2. The Statements of Standard Accounting Practice issued by the Accounting Standards Committee, dating from 1971,¹⁸ and,
3. The Stock Exchange Council's Listing Agreement for Companies (June 1972). (The request of the Chairman of the London Stock Exchange in 1964 for a historical review of salient features of companies' accounts covering a number of years will be considered under the voluntary heading since a significant number of companies do not comply with this request.)

Our interest lies in the elements of repetition which these three sources have introduced in corporate disclosure requirements; if readers wish to consider the accounting treatment given by companies to these items they will find the *Survey of Published Accounts 1973/74*¹⁹ an invaluable source.

Not surprisingly, the degree of redundant information (from the point of view of repetition) which has been introduced into the disclosure requirements by the controlling bodies is minimal. The term 'disclosure' means opening up to view, or revealing something (Shorter Oxford English Dictionary). Consequently any increase in the requirements serves to open up new territory; seldom do the regulations deliberately strive to go over old ground. However, notwithstanding these introductory points, certain relevant aspects may be noted.

If Cherry's observations about the unlimited guessing capacity of receivers of messages has validity in accounting, then we must assume that, because of the balancing nature of accounts with their various interlocking devices, there exists a substantial degree of redundancy in financial statements. That is, if we omit, say, share capital and reserves, or fixed assets, or taxation from the face of the accounts then our reader, because of his knowledge of habits and conventions and his predictive capacity to guess the missing item, would still be able to interpret our financial message adequately. But we must reject

this view of redundancy in financial reporting because we have already postulated our user of financial statements as being a person with limited ability to interpret our information.

Neither is it permissible for the notes to the accounts to be styled redundant data. Such notes contain either fresh information which is not shown in the accounts but which is required by the various regulations, or they contain an expansion, or reconciliation, of brief headings in the accounts. The desire for clarity in accounts presentation over the years has led to more information being cast out of the accounts proper and relegated to the notes. Thus, as far as published statements are concerned, the abbreviations of which Chambers speaks do not necessarily signal any implied agreement between sender and receiver – they are merely a means of 'uncluttering' the face of the accounts. It could be argued, however, that redundancy is introduced in the notes to the extent that the magnitude of the repeated items is pressed home in the mind of the reader.

Legislation

The following two items of disclosure are repeated in the statutory documents which comprise a company's annual report and accounts and would appear to be examples of redundant information:

1. Dividend Proposed. This item appears on the face of the profit and loss account as part of the disposal of profit attributable to members, on the face of the balance sheet as part of current liabilities, and in the notes to the accounts usually in conjunction with the dividend already paid during the year in an attempt to explain the effect of the tax imputation system on the dividend per share. Under the Companies Act 1948, s. 157(1) the directors' report must also disclose the dividend proposed. Most chairmen take the opportunity to mention the relevant figures in their statements.
2. Amount to be carried to Reserves. The treatment for this item is similar to the proposed dividend, namely the profit and loss account, the notes to the accounts to help explain the movements in the balance sheet reserves during the year, and the directors' report. It is interesting to note that statute (for no other regulation is involved here) seeks to protect the annual surplus by giving the owners the relevant information about the directors' intention in a number of locations. Redundancy appears to be introduced in these areas to reinforce the stewardship function of accounting.

The Companies Act 1967 also introduces redundancy in the matter of the issue of new shares and

¹⁸Since the Statements of International Accounting Standards become operative for financial statements covering periods beginning on or after 1st January 1975 these Standards have had no effect on the published financial reports which formed part of the empirical content of this study.

¹⁹*Survey of Published Accounts 1973/74*, op. cit., numerous references.

debentures during the year. Section 16(1)(b) requires that the directors' report include, *inter alia*, the number and class of shares and debentures issued during the year, but this information is already derivable from a study of the comparative figures in the balance sheet. However it is sometimes claimed that the requirement of the 1967 Act to show the annual depreciation charge on fixed assets in the profit and loss account is a duplication of information which is derivable from the balance sheet disclosure requirements for fixed assets. This is not so. While a large number of companies do show the annual 'topping-up' amount to the accumulated depreciation account in the balance sheet notes, they are not required to do so by law. Of *The Times* top 100, 41 companies did not disclose this annual amount separately in the balance sheet notes nor was the profit and loss amount reconcilable with the balance sheet schedules.

Accounting Standards

The ASC Standards have avoided introducing blatantly redundant information (from the point of view of repetition) although two standards could be interpreted as having some redundant qualities about them. Statement of Standard Accounting Practice No. 3 on Earnings per Share requires that the calculated figure be disclosed on the face of the profit and loss account; it also requires that the basis of calculation be shown either in the profit and loss account or by way of note. The basis of calculation is the redundant part of the statement since the rubric 'Earnings per Share' *should* be sufficient to provide the user of the accounts with the necessary clue of what the fraction for the calculation is. Happily, this piece of redundancy has been introduced because it is not always clear in many published accounts, even with the redundant data, how earnings per share has been calculated! This type of redundancy should be distinguished from the requirements of SSAP No. 6 on Extraordinary Items. Here the rubric in the profit and loss account gives no indication of the items involved and hence the additional information required is in no way redundant.

Provisional Statement of Standard Accounting Practice No. 7, 'Accounting for Changes in the Purchasing Power of Money', may be seen by some as providing a classic set of redundant data to the user of published accounts. As we have seen, the repetition of all or part of a message guards against misinterpretation. This is exactly the reason for restating a company's historic cost financial statements in terms of current purchasing power – the company's management wish to guard the readers of their accounts against misinterpreting the traditional

statements. All the company is doing is saying to their shareholders 'Let us put these statements another way for you.' Certain companies introduce further redundant information with regard to this Standard by publishing a note on their reservations or hostility to the chosen concept of current purchasing power in preference to replacement costs.

The Stock Exchange

The Stock Exchange Listing Agreement for Companies (1972) introduced a number of fresh disclosure requirements for companies seeking a Stock Exchange quotation. No repetition of existing information was recommended by this document. However the requirement for the directors' report to show the geographical analysis of turnover and of the contribution to trading results of those trading operations carried on by the company outside the UK is in the nature of redundancy because the Companies Act 1967, s. 17(1) requires a company to show a percentage and monetary breakdown of turnover and profit before tax by trading activity, so that the Stock Exchange requirement means that the statutory information is shown in another way – it is made more meaningful. The Stock Exchange requirement in this regard has in fact led to several examples of redundancy in that many companies express these analyses in more than one way, for example, by table *and* bar chart. This will be considered in the section dealing with voluntary redundancy of regulatory information.

However small the areas of regulatory redundancy appear to be, their effect (and no doubt their aim) is to help the reader in his understanding of the annual statements: whether it is the innocent duplication of data on the proposed dividends or the more complex presentation of the results in terms of current purchasing power, the user of the published statements has a more meaningful picture of the activities of the company.

Voluntary redundancy

Any information which is supplied by a group in their annual report and accounts which is not strictly required by the three regulatory 'bodies' considered in the previous sections is deemed, for the purposes of this article, to be redundancy introduced on a voluntary basis. This voluntary redundancy can take two forms: repetition or duplication of regulatory data, and gratuitous contributions of fresh information about group activities.

Repetition and amplification of regulatory data

Table 2 gives details of the types of information which can be classed under this first heading. We

TABLE 2

Areas of voluntary repetition or amplification of regulatory information in published accounts¹

Historical Summary:

covering a number of years and including such items as profit and loss accounts, balance sheets, funds statements and miscellaneous statistics: for example, gearing percentages, return on capital employed, return on shareholders' equity, return on sales, dividend cover, earnings per share.

Sources and Uses of Funds Statement

'The Year in Brief' Statement²Summary of Assets and Liabilities³

Comments on Working Capital

Notes

¹ The number of companies which introduce the first three headings of redundancy into their published accounts can be found, with examples, in the *Survey of Published Accounts 1974/75*, pages 181-197.

² This statement is sometimes given other titles: in the annual reports of *The Times* top 100 industrial companies 15 variations in title were observed. The data given in this type of statement is predominantly financial, but some non-financial data described in Table 3 is also sometimes shown.

³ In *The Times 100* only Unilever gave this statement. This is perhaps a reflection on the visual confusion of their balance sheets proper.

include information which, *prima facie*, is derivable from the published accounts and notes to the accounts, but as our remarks on the calculations of earnings per share show, such data are not always retrievable without additional information not required under regulation. For example, items included in sources and uses of funds statements (still an exposure draft at the time of writing, but from 1st January 1976 to be upgraded to the category 'regulatory redundancy') are not always traceable in published regulatory information even though Exposure Draft No. 13 suggests that figures included in funds statements should generally be identifiable in the accounts. *The Survey of Published Accounts 1973/74* identifies the areas where this is particularly noticeable: the treatment of minority interests, associated companies, sales of non-current assets, and differences on exchange and acquisitions.²⁰ Another area which is rich with 'behind the scenes' adjustments is the group's financial track record covering a number of years. The heading most altered appears to be taxation and statistics based thereon: as the rates and methods of assessment and collection change so the historical summaries must be adjusted to facilitate meaningful comparison between years. Neither is this data in Table 2 necessarily given in absolute numerical terms. It may be given in graph or chart form (to reveal

trends) and consequently is not fully 'retrievable' by the reader without access to not only the accounts of previous years but also to the relevant working notes.

Of *The Times* top 100 industrial companies, 53 introduced 'The Year in Brief' type of statements, a statement which could be subtitled 'Big Print for Slow Shareholders' - crude, perhaps, but to the point! It was surprising to discover that of the companies which published this statement only ten featured the statement at the very beginning of the Annual Report, the location where it would surely have most impact.

Many chairmen's statements or directors' reports introduce redundancy to the extent that they highlight certain key figures from the accounts for discussion. Not surprisingly the topical problem of shrinkage and subsequent replenishment of working capital is discussed explicitly in 28 reports in *The Times* top 100. We include the topic in Table 2 because the working capital of a firm can always be calculated from the published accounts (as can many other key figures discussed by chairmen) and a comparison of the previous year's ratio will provide the experienced user of financial statements with the information he requires. But we have postulated a user with limited financial expertise, therefore such redundancy must enable this class of user to obtain a clearer picture of the effect of inflation on the already anaemic lifeblood of the firm. Typical of such statements is that contained in the Directors' Report of Esso for the year ended 31st December 1974: 'During

²⁰Ibid., p. 182.

the year there was an exceptional increase of £188 million in the requirements for working capital caused by the higher prices of crude oil so that our working capital in stocks and accounts receivable now exceeds our net fixed assets. Working capital requirements which trebled within the year, exceeded all our internal cash generation, and required substantial borrowing'.

Fourteen companies in *The Times* top 100 introduce redundancy into their reports by repeating some items in the regulatory requirements of the Companies Act 1967 and the Stock Exchange in regard to the analyses of turnover and profit before tax into activities and geographical locations. Of these 14 companies, eight introduce the redundancy by way of graph or chart or other pictorial representation. The other six companies repeat the information, which is usually contained initially in the directors' report, in a statistical section towards the back of the annual report. Although these 14 companies take the trouble of repeating some parts of these regulatory requirements it must be noted that four of them fail to comply with the exact requirements of the Companies Act and Listing Agreement in some respect or another. For example, Tate and Lyle supplies a table of turnover and profit percentages by activity and a colourful pie-chart with exactly the same data on profit percentages, but fails to give any breakdown whatsoever on the geographical location of turnover and profit. In fact this whole area of regulatory requirement is interpreted fairly loosely: in *The Times* top 100, 35 companies apparently ignore the exact disclosure requirements.

Repetition: reinforcement and guarantee

From the disturbing findings of the empirical research conducted by Lee and Tweedie²¹ it may be thought that far more repetition should be deliberately introduced into company reports and accounts. In their survey of private shareholders the general impression gained was that most private shareholders 'merely skimmed through the annual report'. Of the various sections of the annual financial report, only the chairman's statement attracted thorough attention from over half the respondents, while the notes to the accounts were ignored by 34 per cent of the respondents.

Apart from the obvious conclusions which can be drawn from these alarming statistics, especially in regard to the reader's ability to understand the accounts without referring to the supporting notes,

they support Bedford's thesis about words and numbers: because number symbols are more precise than words and therefore demand more care and concentration in reading them, readers tend to give a wide berth to masses of quantitative data, settling instead for the easy comfort of the written word. It would appear that if the reporting accountant is determined to get across some significant numerical message to his reader he would be well advised to sprinkle the data rather liberally over all sections of the financial report. In this way, regardless of the reader's predisposition towards specific sections of the annual report, he will receive the message at least once. Here we can see the role of redundancy being extended from the simple reinforcement of the impact of the message by repetition, to the virtual guarantee of communication of the message by placing the data at numerous locations in the annual report.

Gratuitous contributions of fresh information

So far we have considered redundancy only from the point of view of data repetition, both regulatory and voluntary. This form of repetition has ranged between the straight presentation of the information for a second, and sometimes a third, time as in the case of the proposed dividends, to the more subtle repetition of information as in the case of a funds statement where, contrary to the spirit of ED13, one's powers of detection often have to be sharp to spot where the repetition occurs!

The term 'redundancy', however, extends its meaning to include additional data where such data will help prevent the recipient of the message from misinterpreting its contents. If we treat the regulatory disclosure requirements for corporate reports as the point of zero redundancy, and if we add to this zero base the areas of voluntary repetition and amplification already discussed, then we may deem all other information which is contained in published company reports and accounts as purely gratuitous attempts on behalf of the board of directors to supply the readers with information which they presumably believe to be helpful, interesting and relevant to the decisions which are based on the document. This section considers briefly some of these additional topics which some companies include in their annual report and accounts. Clearly it would be impossible to tabulate every conceivable additional piece of data which can be supplied – Table 3 includes only the items which appear in annual reports with a degree of regularity.

It is difficult to imagine how some topics in Table 3 could help the reader of the company's annual report reach a more meaningful decision; for example, topics 7 and 13 appear to lack significance for decision-

²¹T. A. Lee and D. P. Tweedie, 'Accounting Information: An Investigation of Private Shareholder Usage', *Accounting and Business Research*, Autumn 1975, pp. 280-291.

TABLE 3
Areas of voluntary non-repetitive information in published accounts

<i>Topic</i>	<i>Possible Contents</i>	<i>No. of Companies Disclosing such Data in 'The Times' Top 100 Industrial Companies</i>	<i>Examples of Companies Dis- closing this Information</i>
Non-Statistical			
1. Review of Operations	Detailed narrative review of each operation, containing a tabular presentation of this year's sales and profit contribution for each operation (with comparative figures for previous year). Photographs are often supplied of either the activity or the product.	8	Unilever British Oxygen Turner and Newall
2. Details of Research and Development (other than note on Accounting Policy)	Description of projects in hand; discussion of practicality (and profitability) of each project in the future. Actual expenditure for the past year is sometimes given.	20	GEC Fisons
3. Health, Safety and Environment	Existence of employee awareness programmes; accidents at work, with industrial average; awards received for specific safety schemes; research into effluent control and recycling waste; conservation of local environment; recognition of importance of visual amenity.	21	Esso English China Clays
4. Social Policy	Explicit recognition of customer satisfaction; awareness of the obligations of corporation citizenship; details of schemes for employees to help in social causes.	4	Rank Xerox Sainsbury
5. Personnel (other than information required under Companies Act 1967, S.18 (1))	Training schemes; participation in decision-making; equal opportunities; mobility in employment; absenteeism; disputes; comments on industrial relations; encouragement of cultural pursuits.	17	Royal Dutch/Shell BLMC Lucas
Statistical			
6. Analysis of Capital Expenditures	Expenditure of past year (with comparative figures for previous year) broken down by operation or geographical location. A narrative description is sometimes provided about past expenditure and entire plans.	7	BP
7. Results in Different Currencies	Salient features of group financial and statistical data.	6	GKN Allied Breweries
8. Organisational Structure	Analysed into companies within Group, geographical location, operation, or senior management.	7	P & O Bowater

TABLE 3—continued

9. Table of Quarterly Results for Year		2	ICI
10. Table of Half-yearly Results		3	Dunlop
11. Financial Calendar for Shareholders		48	BICC
12. Shareholder Analysis		27	Boots
13. Take-home Pay of Directors and Employees earning over £10,000		16	Ocean Transport and Trading
Visual			
14. Photographs and Art Work	Operations; research and development; new plant; products; directors; promotions; advertising slogans and posters; cartoons.	50	Trust Houses Forte GKN Unigate
15. Charts and Graphs (for purposes other than Geographical and Activity Analysis of Turnover and Profit or for data normally contained in Historical Summary: see Table 2)	Product analysis of assets; growth by division; specific operational statistics on capacity, usage, efficiency; safety record; exports; interest rates; funding by different currencies; sales by product types; share price and FT Index; index of wages; raw material prices and sales prices.	11	Burmah Trafalgar House Delta
16. 'Where the Money Goes!' Diagram	Analysis of each £1 of sales income into payments for supplies, wages, interest, taxes, dividends and retentions, analysis of each £1 of profit into depreciation, minority interest, taxes, dividends and retentions.	5	Grand Metropolitan Taylor Woodrow
17. Employee's Version of Annual Report and Accounts (if published, either circulated to shareholders or available on request)	Message from Chairman; graphical presentation of sales and costs, assets and liabilities, cash flow and borrowings.	6 (at least)	British Oxygen Alcan (UK)

making, being included presumably for the reader's interest. But whatever has motivated the management of the company to include these 17 topics²², it can be seen that all such gratuitous contributions of fresh information enable the reader (whether with limited interpretative ability or not) to gain a greater

insight into the complex affairs of the organisation than would otherwise be achieved from the virtually zero-redundant regulatory disclosure requirements.

Some observations of Table 3

Restriction on space prevents us from a detailed discussion of individual cases of voluntary fresh information – Table 3 indicates the companies which, in the author's opinion, treat the appropriate topics in exemplary manner. A number of brief observations can be made, however:

²²The *Corporate Report* makes the cynical observation that these additional features of annual reports have developed more recently as the public relations value of such reports has become recognised (paragraph 4.6).

1. It is surprising how few companies in *The Times* top 100 presented their review of operations in the manner described in topic 1. Too many companies are content with a rambling account of the year's activities which lacks precision or direction. The eight companies seen to give the data described leave the readers of their reports in no doubt as to the contribution, problems, successes and future of each operational sector. Repetitive redundancy is introduced in the statistics for each sector if the company supplies the geographical and sectional analyses of turnover and profits in another location in the report.

2. The main argument presented by the opponents of disclosure of information on research and development is that the company's competitors could obtain valuable information which may enable them to 'steal a march' on the disclosing company. And the opponents of disclosure also suggests that if the data supplied does not give valuable information then it is not worth having! A quick glimpse of the reports of the 20 companies who discuss R & D will show that both stances are plainly exaggerated. A general note along the lines described in topic 2 is sufficient to give the reader with limited or no access to any other information an indication of future developments and of the company's ability to meet the demands of an ever-increasing rate of technological change. It is ridiculous to suppose that competitors await the publication of annual reports before gaining knowledge of their rivals' research and development programmes; this attitude pays scant regard to the powerful effect of the corporate grapevine. The accounting profession is guilty of too much emphasis on disclosing the accounting treatment of R & D rather than giving to many readers what would be of much more significance, the broad outline of the programme itself.

3. The increasing awareness of the stability and capability of a company's labour force finds expression in several topics voluntarily discussed in company reports; topics 3, 4, 5 and 17 deal with this subject. One wonders if this type of information is the embryo of a fully developed system of accounting for a company's human resources. In parenthesis it is suggested that all companies who do prepare employees' versions of their report and accounts should send these versions automatically to shareholders: the simple and forthright style of these documents is commendable and the thought which some managements may entertain that this version would be 'talking down' to shareholders should be dismissed.

4. The diversity of information described in topic

15 which 11 companies between them provided by means of charts, graphs and other types of diagram suggests that most information, financial and non-financial, currently given in company reports in numbers and words could be communicated by visual techniques. Considering the strictures of Bedford about the precision required to read numbers, there seems to be real scope for research into the communicative capabilities of traditional financial statements constructed in chart or graph form. Some companies already feel that it is worthwhile to show the breakdown of £1 of sales or profit in diagrammatic form (topic 16).

Summary and conclusions

Accountants involved in financial reporting are faced with two major obstacles: the complex activities of the business enterprise they seek to represent in financial terms, and the wide range of financial expertise and knowledge enjoyed by the users of the accountants' data. Such range has led, as we have seen, to the Trueblood Report stating that an objective of financial statements is to serve primarily those users who have limited authority, ability, or resources to obtain information and who rely on financial statements as their principal source of information about an enterprise's economic activities. Both obstacles should compel the accounting profession to reconsider the adequacy of the information which they communicate to the user, and the techniques which are employed in the communication process.

It is suggested in this article that the introduction of redundant information enables users of varying financial sophistication to gain a deeper and more meaningful insight into the complex state of corporate affairs. This redundancy would not only be in the form of repetition and amplification of data demanded by the regulations which govern disclosure requirements but also fresh data above and beyond the call of regulatory disclosure. Indeed as *The Corporate Report* recognises²³ the reporting of profit and loss and balance sheet figures only will, in the future, be insufficient to impart a comprehensive picture of economic activities. Table 3 displays what a small number of quoted companies are already doing in this regard; the possibilities for further innovations in additional disclosure of corporate activities seem to be endless.

Some further points can be made in conclusion:

1. As we see from Table 1 the semantic creativity

²³Ibid., paragraph 6.3.

of company accountants and their auditors appears to be unfettered. There is little justification for this casual disregard for the problems of interpretation by the users of financial statements. If the profession is exercising control in regard to accounting standards, then some kind of control must also be shown in regard to the language in financial statements; indeed it could be argued that language is as much an accounting standard as the other standards already published or projected.

2. Certain topics which appear in Table 3 can be seen to adopt an educative stance in relation to the user as well as an informative one. Some companies include feature articles not only on financial matters but also on technical matters concerned with the business of the company. The annual report of Associated Portland Cement is an

excellent example of a company which includes articles on both financial and technical matters. Where such pieces allow the user of the report further insight into the company's affairs then they should be actively encouraged by the accounting profession.

3. In response to Bedford's warning of the dangers to be encountered in reading a report constructed predominantly in terms of digits, more research is required to establish the potential value of financial reports presented to users in different styles. Is it too fanciful to consider future reports in predominantly narrative terms, or in cartoon form, or even in pop-up form? The novelty of such notions may be exceeded only by their effectiveness in communicating with users of financial statements.

The Investment Discount Rate – In Defence of the Market Rate of Interest

Simon M. Keane

Few writers would question the validity of the discounted cash flow approach for evaluating capital investment projects, yet it appears that it has not yet gained widespread¹ or wholehearted² acceptance by managers. One of the principal stumbling blocks is the choice of discount rate. The basic economic model asserts simply that a project's cash flows should be discounted at the market rate of interest i to reflect the time value of money. But this simple rule is assumed to be unacceptable in the framework of modern capital budgeting theory for three reasons:

- (a) Capital projects have varying degrees of risk and the market rate of interest must be modified to reflect relevant risk characteristics.
- (b) The interest payments on the firm's debt capital are privileged for corporate tax purposes *vis-à-vis* dividends on preference and equity shares, and the benefit of this privilege should be reflected in the investment discount rate. In particular the cost of the debt element in the discount rate should be reduced by the factor $(1 - t)$ where t = the rate of corporate tax.
- (c) There are costs involved in raising new capital and the required rate of return must be raised to allow the firm to recover sufficient to cover these transaction costs.

The purpose of this paper is to present a case for using the market rate of interest without any of the above adjustments on the grounds that adjusting the rate for risk is an unnecessary refinement, and that both reducing the rate for tax purposes and increasing it to allow for flotation costs lead to incorrect solutions.

Risk

The assumption that a risky project, that is a project which has more than one possible outcome, should

offer a mean return materially greater than the return obtainable from a government bond before being acceptable is well entrenched in capital budgeting literature, and because it has immediate intuitive appeal, to argue otherwise must inevitably meet with a hostile reaction. Before continuing, therefore, it is necessary to emphasise that the discussion which follows proceeds on the basis of the conventional assumption that the firm's objective is to maximise shareholders' wealth. The capital budgeting model, therefore, is assumed to be concerned with measuring the contribution which a project makes to the wealth of the *shareholders*. It is their risk-aversion which is relevant. However risky a project might appear from management's viewpoint, this should not affect the measurement of the project's contribution to the value of the firm from the shareholders' point of view. In practice, of course, a highly risk-averse management might reject a project which would be acceptable to shareholders, but the fact remains that to measure a project's acceptability to shareholders it is shareholders' price of risk which is relevant. If the value of a project is to be measured from the viewpoint of management a different set of criteria would need to be developed. The following discussion, therefore, takes no account of management's individual preferences.

One important development in capital budgeting theory has taken place in recent years which radically affects the materiality of the risk-adjusted discount approach and that is the perception that the relevant risk of a project to shareholders is not the risk in isolation, or as it affects the company, but the risk which investors cannot diversify away in their own portfolios.³ It does not matter if some investors do not in fact diversify efficiently because that is their choice. Management's responsibility is to seek to earn the return needed to compensate investors for the risk which they *cannot* diversify away.

¹See, for example, Fremgen, 1973 (A list of references is given on page 236).

²See, for example, Klammer, 1972.

³See Haley and Schall, chapter 6.

The market portfolio

This principle leads us to the question of what constitutes an efficiently diversified portfolio. Academics have, for the main part, found it convenient to carry out their empirical studies by identifying the 'market portfolio' with the New York or London Stock Exchange, and to define relevant risk in that context. But in theory and in practice it is quite possible for an investor, if necessary through the agency of Investment Trusts etc., to construct a portfolio which includes not only US or UK shares but also Japanese, German, Australian etc. securities together with other risky assets such as corporate bonds, land etc.:⁴ in other words to construct a world-wide portfolio of assets. It follows that unless we can assume beyond all reasonable doubt that such a portfolio carries significantly more risk than a government bond, we cannot assume that the required minimum return from the portfolio should have a risk-premium over the return expected from the bond.

Moreover, in making this judgment it is necessary to bear in mind that the fact that such a widely diversified portfolio will inevitably retain some degree of volatility does not imply that it is necessarily more risky than the bond. During periods of inflation (or deflation) a portfolio must have some volatility to offer protection against changes in the price level. A government bond, on the other hand, may be default-free but it is not truly risk-free since its 'real' rate of return is variable with inflation. Conventional measures of volatility are made from nominal returns rather than from 'real', net-of-inflation returns,⁵ and they therefore tend to overstate the real variability of equity securities and to understate the real riskiness of fixed-interest securities. It follows that to postulate that the risk-premium in the market portfolio is sufficiently material to require the practitioner to measure it and take account of it in evaluating individual projects, it must be demonstrated that the risk of an efficiently diversified portfolio as defined above is significantly greater than the purchasing power and money risk of a government bond. If this is a matter of serious doubt then clearly it need no longer be assumed to be necessary to modify the market rate of interest when discounting projects which have risk characteristics similar to those of the portfolio.

For projects which have risk characteristics significantly distinguishable from those of the market portfolio, it is arguable that some adjustment to the

bond rate may continue to be necessary. Such an adjustment might, of course, be downwards rather than upwards according to whether the project is perceived to increase or reduce the riskiness of the portfolio. The necessity for making any adjustment, however, depends upon one assumption that is inherent in conventional risk-analysis but for which in fact there is very little evidence. It is the assumption that the general hypothesis that investors are averse to risk implies that investors are averse to all levels of risk. One of the behavioural observations which is frequently cited⁶ in support of the risk-aversion hypothesis is the fact that investors insure their houses and cars, and of course it is true that this must be assumed to indicate that investors are willing to pay a premium to avoid the possibility of serious loss. But under other circumstances investors are observed to pay a premium to assume risk when they purchase lotteries or engage in any other form of gambling. Therefore, it seems much more reasonable to postulate an ambivalent attitude to risk on the part of investors which leads them to insure against significant risks by diversifying their portfolios, but to be willing to accept a measure of risk without any compensation. If this assumption is a valid one, then it follows that provided the riskiness of the efficiently diversified international portfolio is within the risk-tolerance level of investors, a risk-premium for any individual project whose candidacy is being considered is unnecessary.

The market evidence

Before examining the evidence for a market risk premium it needs to be emphasised that it is not sufficient to establish that in the past there has been an observable premium for risk. The efficiency of capital markets and investors' perception of risk are in a constant state of evolution, and the opportunities for diversification have been enhanced considerably by the creation of investment intermediaries with international portfolios with the result that it is reasonable to assume that the level of relevant risk has tended to decline. Thus if it can be shown that the level of nondiversifiable risk at one time exceeded investors' tolerance level it does not follow that such a condition exists in today's capital markets. Therefore, when we observe the past behaviour of securities we must look for trends to see if the risk premium postulate is justified in current conditions.

To begin with there is the well documented fact that equities have consistently performed better than government bonds and this has been assumed to

⁴Robichek, Cohn and Pringle, 1972.

⁵See J. Lintner, 1975.

⁶See, for example, J. Hirshleifer, p. 230.

support the assumption that investors needed a minimum return higher than the return on government bonds to attract them into equities. This conclusion, however, contains a fallacy. A number of studies⁷ have revealed that the difference between returns from equities and returns from bonds is significantly and consistently greater than can be accounted for by perceived differences in risk. One explanation offered is that there exists segmentation of markets between stocks and bonds.⁸ An alternative explanation, however, is that such a disparity is an inevitable consequence of the positive net present value rule in capital budgeting. The basic rule in capital budgeting is that projects should not be accepted unless they are expected to yield a higher return than the required minimum k . In effect managers are exhorted to undertake only projects which are expected to earn returns *in excess* of the minimum return required by the suppliers of capital. According to conventional theory k is the rate needed to satisfy investors given the risks involved and therefore the expected excess is not 'the reward for risk-taking' which economists frequently suggest. It is a genuine excess, otherwise the positive NPV rule and wealth maximising objective of finance theory are illusory. Clearly, then, if a project is accepted only if it is expected to earn more than the minimum required of it, it is fallacious subsequently to look back at the actual return earned and conclude that that return equalled the minimum required return.

In the same way the realised returns from shares can be expected to exceed the *minimum* return acceptable to shareholders as long as the source of those returns is from projects selected on the basis of positive NPV rule. Imagine a dialogue between the shareholders of a newly formed company and its management, in which the shareholders indicate that, for the type of projects which the company is expected to engage in, the minimum return acceptable is ten per cent. If management happens to find a project which is expected to earn 15 per cent, and successfully sets out to achieve that return, the shares could be expected to earn 15 per cent over the life of the project. But it would be quite misleading for an observer to look backwards at the performance of the share (in the form of dividends and capital gains) and to conclude that shareholders required 15 per cent. There is in fact no way of knowing from such a retrospective analysis what shareholders required as a minimum. It would certainly be contrary to share-

holders' interests if management decided thereafter to reject any project which did not offer a yield of at least 15 per cent. Now if we can assume that every company in the market seeks to achieve positive NPVs from its projects, a similar picture emerges. Some companies, of course, will not earn the expected IRR and others will earn more, but the average return should over time be expected to approximate the average IRR, which by definition should be higher than k . It follows that the returns which equity shares have earned in the past are almost bound to be greater than the returns which investors required as a minimum, and that we cannot draw any conclusion about the existence or magnitude of a risk premium by observing the realised returns. The findings of Ellis, Blume and Friend, and Norgaard support this observation. Recognition of this disparity between *ex ante* and *ex post* returns is important because although shareholders' required return is theoretically estimated by looking forward and relating shareholders' expectations to the current share price, the general assumption that equity investors do require a premium for risk draws much of its strength from the observation that they have in the past consistently earned more than default-free securities. Because the estimation of shareholders' future expectations is known to be an exceedingly difficult and subjective undertaking, it is difficult not to be influenced by observations of the past behaviour of shares.

Of much greater significance to the risk-premium controversy are the studies carried out to test how the returns from shares appear to vary among themselves according to their degree of relevant risk or beta factor,⁹ that is according to the degree of correlation of the share's returns with the returns from the market portfolio. Results indicate that shares with a high degree of relevant risk have earned more on average than shares with a low level of risk. The actual returns earned by the respective shares, of course, cannot, as we have seen, be taken to represent the returns required because of the effect of the positive NPV rule, but if the returns are more for riskier securities this would suggest that investors do in fact differentiate on the basis of perceived risk.

By necessity, these studies have related to long periods of time in order to avoid the distortions which short term analysis can produce. We have observed, however, that capital market conditions are continually evolving and that average results over long periods are poor indicators of current conditions. A more fruitful insight can be obtained by analysing

⁷See, for example, Ellis, chapter 3; Blume and Friend, 1973; and Norgaard, 1974.

⁸Blume and Friend, 1973.

⁹See Francis and Archer, pp. 120-122.

the results obtained into shorter consecutive periods to detect whether any perceptible trend can be established.

Fortunately, a recent major study by Black, Jensen and Scholes¹⁰ (BJS) included such an analysis and the results have a significant bearing on the issue. BJS examined the monthly returns for ten portfolios chosen according to their degree of riskiness for the 35 years from 1931-1965. The overall results are summarised in Table 1, where the first line gives a measure of the portfolio's relevant riskiness and the second line the average monthly excess returns which the portfolio was observed to earn. Portfolio 1 contains the highest-risk securities and portfolio 10 the lowest-risk securities. The results appear to confirm the conventional assumption that high-risk portfolios should earn more than low-risk ones. But when BJS divided the 35 year period into four subperiods of 105 months each, as in Table 2, a distinct and important pattern emerged. The tendency for high-risk securities to earn more than low-risk securities became progressively less marked over the period until, as can be seen from the latest of the four subperiods (1957-65), the risk factor had no perceptible influence whatsoever. This subanalysis strongly supports the hypothesis that the relevance of risk in evaluating assets has steadily declined as capital markets have improved, and that managers can safely use the pure rate of interest irrespective of differences in project volatility.

It might be asked why, if this piece of data has been available since 1972, its significance has not been earlier recognised. One explanation is that the returns of the equities, albeit indistinguishable latterly amongst themselves in respect of risk, are on average significantly greater than the returns obtained from government bonds, and to any interpreter who has not considered the significance of the positive NPV effect outlined earlier, and the results of the Ellis etc. studies, this would appear to corroborate the basic risk premium theory. He would simply search for some other explanation to account for the findings of Table 2.

Thus in their own analysis BJS did not comment on the significance of the reported trends from the aspect of investors' attitudes to volatility. In correspondence with Professor Michael Jensen, the writer asked whether he would agree that the results of his study were consistent with the hypothesis that investors' aversion to relevant risk had, over the period, shown a steady decline and that latterly investors appeared to be indifferent to the existing

level of undiversifiable risk and to accept the expected return as the sole criterion of value. He replied that the results were in fact consistent with this hypothesis, although he believed the hypothesis to be incorrect, in view, for example, of the continuing 'demand for insurance'. It should, however, be emphasised again that the observation that shareholders appear to be willing to accept the existing level of nondiversifiable risk does not imply that shareholders have become indifferent to risk. It is quite consistent with the proposition that investors are averse to significant risk and are observed to insure themselves against it, to assume that once the significant risks are insured against (in the context of investing by the process of diversification) they are willing to accept the residue of risk. The BJS study strongly supports the conclusion that the current level of nondiversifiable risk is firmly within the risk-tolerance level of investors.

In order to test whether these conclusions appeared to conform to investors' own acknowledged attitudes to risk, the writer conducted interviews (May 1974) with 50 equity investors.¹¹ The interviewees were invited to give their opinion about the respective merits of an internationally diversified portfolio of equities on the one hand and an undated government bond on the other. The results of the survey were as follows:

1. 92% of the interviewees expressed the opinion that the portfolio of risky assets was actually safer than the government bond in the medium to long term, taking into account inflation.
2. If each company in the portfolio used the bond yield as the cut-off rate for new projects without any risk premium, 96% of the interviewees would prefer to put all their investible funds into the portfolio, and 100% at least some of their funds, in the medium to long term.
3. Given the choice between a certain 10% and a volatile 10% from a well-diversified portfolio, 96% of the investors would choose the portfolio for at least some of their surplus funds and 66% for all of all of their surplus funds.

These results reinforce the interpretation offered above of the BJS findings. The evidence is not, of course, sufficient in itself to prove conclusively that a market premium for risk no longer exists. But it does call into question the validity of the conventional assumption that there is a significant market premium for risk, and that managers cannot effectively operate

¹⁰Black, Jensen and Scholes, 1972.

¹¹Representing five occupational groups: (a) professional advisers and portfolio managers; (b) professional accountants; (c) industrial executives; (d) business academics; (e) general.

TABLE 1
Excess returns for portfolios with varying degrees of risk (January 1931 – December 1965)

	Portfolio Number									
	1	2	3	4	5	6	7	8	9	10
Relevant risk (β)	1.5614	1.3838	1.2483	1.1625	1.0572	0.9229	0.8531	0.7534	0.6291	0.4992
Excess returns	0.0213	0.0177	0.0171	0.0163	0.0145	0.0137	0.0126	0.0115	0.0109	0.0091

TABLE 2
Analyses of results into sub-periods

	Portfolio Number									
Sub-period	1	2	3	4	5	6	7	8	9	10
Relevant risk (β)										
1	1.5416	1.3993	1.2620	1.1813	1.0750	0.9197	0.8569	0.7510	0.6222	0.4843
2	1.7157	1.3196	1.1938	1.0861	0.9697	0.9254	0.8114	0.7675	0.6647	0.5626
3	1.5427	1.3598	1.1822	1.1216	1.0474	0.9851	0.9180	0.7714	0.6547	0.4868
4	1.4423	1.2764	1.1818	1.0655	0.9957	0.9248	0.8601	0.7800	0.6614	0.6226
Excess returns										
1	0.0412	0.0326	0.0317	0.0272	0.0230	0.0197	0.0166	0.0127	0.0115	0.0099
2	0.0233	0.0183	0.0165	0.0168	0.0136	0.0147	0.0134	0.0122	0.0126	0.0098
3	0.0126	0.0112	0.0120	0.0126	0.0117	0.0109	0.0115	0.0110	0.0103	0.0075
4	0.0082	0.0082	0.0081	0.0087	0.0096	0.0095	0.0088	0.0101	0.0092	0.0092

*Sub-period 1 = January 1931 – September 1939; 2 = October 1939 – June 1948; 3 = July 1948 – March 1957; 4 = April 1957 – December 1965.

the discounting model without modifying the objectively determined market rate of interest. If there is real doubt as to whether the market price of risk is of material proportions, it would seem much more realistic for practitioners to use the market rate as it is for discounting purposes than to engage in the difficult and highly contentious undertaking of deciding in what direction and how far to modify it.

The tax-deductibility of interest payments

In a recent paper¹² the writer argued that although the cost of corporate bonds appears to vary according to the variability of the expected returns, this in effect is an illusion because in fact only the *nominal* rate of interest is observed to vary with risk, and it is the *expected* rate of return which is the relevant cost for discounting purposes, and in a well-diversified portfolio of bonds it is unlikely that bondholders have an expected return materially greater than the yield on a default-free bond. Effectively, therefore, there is only one cost of capital irrespective of how a project is financed, namely the market rate of interest.

But the interest payments on debt securities are favoured for corporate tax purposes and it has been traditional in capital budgeting texts to make allowance for this by reducing the cost of debt by the factor $(1 - t)$ where t = the rate of corporate tax.¹³ This device of reducing the cost of debt for discounting purposes is based on the convention that a project's net-of-tax cash flows should be computed as if there were no tax advantages to debt financing, and, by way of compensation, on the fiction that the required return on debt is less than it actually is by an amount equal to the tax advantage. Apart from being illogical, this technique in fact produces incorrect solutions where, as in the UK, there is a time lag between the payment of the tax and the receipt of the relevant income flows. To illustrate, assume that a company with 50 per cent debt is presented with a project costing £1,333, and which offers a prospective perpetual cash stream of £200 before tax. If the rate of tax $t = .5$ and the rate of interest $i = 10\%$, and the tax were payable instantly on receipt of the income flows, then, according to the conventional practice the cost of debt would be $i(1 - t) = .5$ and the investment discount rate would be $.5(.10) + .5(.05) = .075$. The present value of the project would therefore be $£100/.075 = £1,333$. It can be seen that the numerator (£100) is derived from the assumption that the project's cash flows suffer tax at the full rate without any

relief for the debt financing. To compensate, the tax benefit is reflected in the discount rate where the market rate has been reduced from .10 to .075. An alternative and theoretically more correct approach is to discount the actual net-of-tax flows expected, £133,¹⁴ at the unadjusted rate of interest 10% to give $£133/.10 = £1,333$.

The superiority of the latter approach is made evident when there is a delay in the payment of the tax. Assume there is a one year delay, then the above stream becomes £200, £133, £133 etc. . . with the result that the present value of the project is increased to $(£133/.10 + £67/1.10) = £1,333 + £61$, where the £61 equals the present value of the benefit of delaying the tax payment one year (the present value of the corresponding outflow of £67 at the termination of the project is assumed to be insignificant). By using the conventional approach, on the other hand, the practitioner is advised to perceive the cash flows as £200, £100, £100, . . . etc. which when discounted at the tax-adjusted rate of 7.5% produces a present value of $£100/.075 + £100/1.075 = £1,333 + £93$. The conventional approach produces an overstatement of the advantage of the tax-deferral by £32, because the approach is based on an overstatement of the project's tax obligation (by £33) combined with an understatement of the rate of interest (by 2.5%), and the compensatory effect ceases to be valid. It follows that the more logical and more correct procedure for reflecting the tax-advantages of debt financing is to adjust the expected cash flows¹⁵ rather than the rate of interest used to discount them.¹⁶

¹⁴ Earnings before interest and tax	£200.0
Interest 10% of £667	66.7
Tax at 50%	133.3
	66.7
	66.6
Add back interest	66.7
	£133.3

¹⁵It would of course be possible to adapt the conventional technique by adjusting the discount rate by a factor other than $(1 - t)$ which took account of the expected delays in the payment of tax. On the assumption, however, that it is better to present non-specialist users with a readily verifiable market rate of interest as the relevant cut-off criterion, this approach does not commend itself. For a more extended discussion of this issue, see 'The tax-deductibility of interest payments and the weighted average cost of capital', *Journal of Business Finance and Accounting* (forthcoming).

¹⁶The implications of the imputation system of tax are not discussed in this paper, and would require a separate study. It would seem, however, that rather than adjust the cost of equity downwards to reflect the tax credit under that system, a similar solution to that proposed for debt of adjusting the after-tax flows to reflect the amount of the tax credit and leaving the discount rate intact would be acceptable.

¹²'Some Aspects of the Cost of Debt', *Accounting and Business Research*, Autumn 1975.

¹³See, for example, Weston and Brigham, p. 600.

Issue costs

We have argued that there is insufficient evidence to justify the adjustment of the market rate of interest for risk, and that it is incorrect to adjust the rate for the tax-deductibility of interest. There remains to consider the accepted assumption that because both investors and the company incur costs in supplying and raising capital, in the form of transaction and flotation costs, it is necessary to adjust the market rate of interest upwards to recover such costs. It will be argued that, as with the adjustment for tax, this device is invalid and leads to incorrect solutions.

Assume that a company raises £1,000 to finance a project costing £1,000 and that the company incurs £50 flotation costs. If $k = 10\%$ textbooks recommend¹⁷ that the basic cost of capital k should be increased to reflect the percentage which the flotation costs bear to the capital sum raised. Thus, if $c =$ the percentage cost of flotation expenses, then the adjusted cost of capital k^* is:

$$k^* = \frac{k}{1 - c} = \frac{10}{1 - 0.05} = 10.5\%$$

If the project were expected to generate £105 in perpetuity, the NPV would be $\frac{£105}{10.5} - £1,000 = 0$, implying that sufficient flows have been generated to meet the annual cost of servicing the capital raised (£1,000) plus the amount needed to recover the flotation costs of £50.

An alternative procedure, which will be shown shortly to be the only valid one, is to treat the flotation costs as additional outlay and to leave the cost of capital undisturbed. Thus:

Initial outlay (£1,000 + £50)	£1,050
Annual cash flows	£105
Discount rate	10
Present value	£1,050
NPV	0

It might appear to be a matter of arithmetic indifference which of the two approaches is adopted. However, the former and traditional approach is valid only under the very restrictive assumption that the project has a NPV = 0. This can be illustrated in the above example if we assume that the project generates a perpetuity of £157.5. The NPV according to the traditional approach is:

$$\frac{£157.5}{10.5} - £1,000 = £500$$

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According to the alternative approach proposed the NPV is:

$$\frac{£157.5}{10} - £1,050 = £525$$

The NPV under the second method is the correct solution. The reason is that adjustment of the discount rate is merely an arithmetic device which ceases to be valid if the present value of the cash inflows differs from the initial outlay, that is if the NPV is positive or negative. Raising the discount rate has the effect of penalising the cash flows. In the above example, the rationale of the device is to penalise the flows to the extent of £50 in present value terms, namely 5% of £1,000. But because the cash flow stream is such as to have a present value greater than £1,000, then the upwards adjustment of 0.5% on the basic rate will exact a penalty greater than £50. In the example the excess penalty is 5% of the NPV of £500, namely £25.

In conclusion, then, flotation costs etc. should be dealt with as additions to the capital outlay and do not necessitate departure from the market rate of interest.

The market rate of interest

Being able to use the market rate of interest directly as the investment discount rate clearly makes the evaluation procedure a much more straightforward process than is conventionally assumed. We are still left, however, with the more fundamental question as to what is the market rate of interest.

There is unfortunately no single rate which is totally satisfactory for discounting capital projects. A wide range of default-free rates of interest can be observed to exist, varying from short-term to perpetuity rates, and therefore there is a wide range of potential discount rates. Similarly, although it is the practice to speak of 'the return' on the market portfolio, there is in fact no single market return. The return required by investors in the year ahead is unlikely to be the same as the return required for the two year period ahead, and still less likely to be the same as that for the ten year period. If any single bond rate can be said to correspond to the 'return on the market portfolio' it is the consol or perpetuity rate because that alone reflects the expected average of all future short, medium and long-term rates expected to operate during the (presumed) perpetual life of the market portfolio.

On the other hand, when translating the market required returns into discount terms for evaluating particular projects, account must be taken of the fact that most projects occupy only a finite period in the

¹⁷For example, Merrett and Sykes, p. 66.

market's perpetual flow. The only theoretically correct approach is to use not one but a series of rates, that is to discount each cash flow of the series at the one year bond rate expected to prevail during that year. This approach, however, has never been strongly advocated because of the very onerous task of predicting future short-term rates. The use of a single average rate is almost universally recommended. The choice is between using the yield of a government bond which matches the maturity of the project, or choosing a single bond rate which represents the expected average maturity of all projects, presumably the long-term bond yield if we assume that the average capital investment is long-term. This contrasts with the conventional assumption (implied by the weighted average cost of capital framework in which the cost of debt is defined as its yield to maturity) that the relevant maturity is that of the bond or bonds which the company happens to have issued. Such an assumption is certainly misplaced. The cut-off rate appropriate for a particular project depends on the project's expected life only and is independent of the maturity of the bonds issued to finance it.

Both of these average rates of course suffer from the disadvantages associated with any averaging process and have the effect of penalising early cash flows and of favouring later flows during periods of expected interest rate rises, and vice versa during periods of expected interest rate falls. The choice of a single long-term bond yield for all projects has the virtue of simplicity but is unnecessarily crude to be generally acceptable. The use of a matching bond yield is to be preferred although care must be taken to avoid a yield which is distorted by capital gains tax considerations. Whichever rate is adopted the problem is one which presents itself equally within the risk-premium framework, although it is generally obscured by the even greater problem of deciding how much of a premium to add to the chosen rate. The issues therefore do not affect the fundamental proposition that the market rate of interest is the appropriate one for evaluating capital projects.

Summary

If the discounting model is to secure wider acceptance in investment decision-making, its rationale should be comprehensible not only to those who make the decisions but, if possible, to those who are affected by the decisions. The key variable is the cut-off rate used to discount the cash flows, and the selection of that rate has become the most controversial element in the investment appraisal procedure. The basic economic rule is that the cash flows should be discounted at the time value of money or the market

rate of interest. If the user departs from the objectivity of the market rate, the rationale and validity of the discounting approach cease to have an immediate intuitive appeal. Unless there are clearly identified advantages in modifying it, it would seem desirable that the market rate should be used in its pure form. The conventional approach, however, advocates refinement of the market rate to reflect the project's risk characteristics, the tax benefits of debt-financing and the costs of raising new capital. It was demonstrated in this paper that as far as the latter two elements are concerned, the correct procedure is for the tax-deductibility of interest payments to be reflected in the net-of-tax cash flows, and for the flotation costs to be added to the initial capital outlay, without any adjustment to the market rate of interest. The conventional device of adjusting the market rate downwards to reflect the tax benefits of debt and upwards to recover the flotation costs is not only unsatisfactory but leads to inaccuracies.

As far as project risk is concerned, it has become axiomatic that the discount rate should be modified to reflect each project's relevant risk characteristics. The operational difficulties of determining the relevant modification, however, are known to be almost insurmountable, and in practice many companies appear to resort to arbitrary rules of thumb. This paper has argued that since the relevant risk for measuring project worth is the risk which shareholders cannot diversify away, the degree of relevant risk when perceived in the context of a world-wide portfolio of securities has declined significantly since the time when the risk-premium concept was first advanced. Market evidence was examined which strongly suggests that the quantum of risk which resides in the universal portfolio of risky assets is within the risk-tolerance level of investors and that securities are now valued on the basis of expected return only. If investors choose not to invest in so well-diversified a portfolio this is their individual preference. They cannot be assumed to need compensation for bearing risk which they could have avoided.

The onus of proof must be on those who affirm the risk-premium framework to demonstrate conclusively that the obvious difficulties and disadvantages for management to depart from the market rate of interest in search for the market price of risk are significantly outweighed by the benefits. The conclusion of this paper is that such proof is significantly lacking and that managers can confidently use the market rate of interest in its pure form as the cut-off rate for new projects.

In practice, of course, a potential conflict arises for managers faced with a decision criterion based on

expected return only without regard for variability. What is acceptable to shareholders may be prejudicial to the security of managers and their fellow employees for whom the relevant risk is not the risk which shareholders are unable to diversify away but the risk which the corporate entity has not diversified away. The incidence of risk has shifted substantially away from the portfolio-holder to the employees of the corporate units which comprise the portfolio. It follows that although variability may be ignored when evaluating the impact of an investment on shareholders' wealth, it may continue to be of significance to the decision-maker. He may not even accept the shareholder-centred criterion to be a compelling basis of selection. But this is an issue which exists whether or not a risk-premium is postulated, because under the shareholder-wealth-maximisation objective of finance theory the magnitude of any risk premium which might exist is determined only by shareholder considerations. The issue is merely highlighted by the conclusion of this paper that the risk-premium concept can be totally ignored in the evaluation of shareholders' interests. The important point is that the market rate of interest appears to be an adequate criterion for optimising the interests of the shareholder group. If other factors are brought to bear

which lead management to select otherwise, they have at least a measure of the cost to shareholders of choosing the alternative path.

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Book Reviews

The Theory of Corporate Financial Reporting
 P. E. M. Standish, Australian National University,
 Department of Accounting and Public Finance,
 Research Monograph No. 3, 1975, viii + 194 pp.
 \$A5.00.

Every researcher is wise to keep his task to manageable proportions by setting precise and explicit boundaries to his study. But he should be careful not to cut across the grain when he sets the limits to his area of concern. Professor Standish quite properly confines his study of financial reporting to reporting to investors in quoted companies and to their advisors. The effectiveness of reporting has to be judged by the extent to which it assists some specified set of users to move towards their objectives. But the exclusion of forecasts and predictions from the study and its restriction to *ex post* performance data is not a natural and satisfactory partitioning of the study of financial reporting (p. 65). It is hard to reconcile with the

statement (p. 16) that 'useful information is either in the form of prediction or it provides description of actual events which the information user believes can be transformed into prediction'.

The most interesting feature of this study is its beginning from a model of the company investor seeking to obtain an efficient portfolio with preferred return-risk characteristics by operating in an approximately efficient market. The role of financial reporting in this context is not however adequately developed. The model would seem to point towards the need for predictors of the expected value of the future dividends and share price and of the systematic risk of the security. Admittedly these are somewhat tall orders, but they should be kept explicitly in mind as the study progresses. In fact, it is not until the last chapter that this model is picked up again, and the difficulties are expounded of using it as the basis of financial reporting in the present

confused state of knowledge of the determinants of share prices.

Instead, the value of information is reviewed at theoretical and empirical levels, leading eventually to the conclusion that 'the provision of information useful for reducing uncertainty and as a basis for revising expectations is therefore regarded as the primary objective for financial reporting' (p. 35). Already at this point the restrictive phrase '*ex post* performance data' appears, without stated justification. Later prediction is described as 'a subjectively determined transformation of some arbitrarily chosen set of data inputs based on observations relating to the past and, possibly, totally unsupported suppositions about the future' (p. 65). It is not surprising after that description that publication of forecasts 'will not be considered further in this monograph'. But investors *may* find that the forecasts of those directly concerned in the management of the company are a useful input to their decision models, especially if they are linked to a comparable series of measures of actual outcomes. It is a pity that the question is ruled out of order by this study. Thirlby argued long ago in very convincing fashion that neither forecast nor actual data alone are adequate to enable judgement to be passed on performance but that we need both. (See 'The Ruler' in J. M. Buchanan & G. F. Thirlby, *LSE Essays on Cost*.)

Professor Standish reviews five possible approaches to construction of a theory of financial reporting. He considers codification of actual practice; the construction of a rational decision model (noting correctly that the functional relationships do not have to be specified for this purpose); observation of preferences by empirical investigation (noting correctly that this is limited to the effects of information currently reported); and simulation. But he adopts for himself the fifth approach, that of deductive model building, as 'the only way in which to develop comprehensive, logically connected theoretical structures' (p. 60).

His deductive model involves the measurement of wealth and changes in wealth. The proposed attribute of wealth to be measured is termed 'time-specific recoverable value'. The valuation criteria for this are: if $EPV > RC$, value at higher of NRV or RC; if $EPV < RC$ value at NRV. This amounts to valuation at NRV except where $EPV > RC > NRV$ when valuation is at RC. Thus EPV enters and influences the calculation but is never allowed to be the output. Standish states that 'market values are viewed as a necessary surrogate for wealth as the derivative of expected future inflows (or utility)' (p. 76). This seems to mean that market values are in some sense a 'better' estimator of EPV than EPV itself. It is difficult to see how this can be reconciled with the

assertion that 'subjective assessment of the future, by definition, cannot directly supply evidence concerning current wealth' (p. 14). This all serves to increase my belief that any attempt to discover current wealth without reference to subjective expectations leads to confusion.

Standish does not accept Gynther's statement that asset valuation and capital maintenance bases are independent variables in the design of a financial reporting system. He says that the concept of capital maintenance is only meaningful in his model in terms of a statement about whether capital now is not less than capital one period ago (p. 94). But his definition of profit (p. 145) is 'wealth produced from operations by earning net revenue and other income, in excess of that required to maintain [the company's] operating capacity for wealth production'. Thus he uses himself two different versions of capital maintenance, and so confirms Gynther's view that the definition of capital maintenance does present a problem separate from the basis of asset measurement.

The purpose of the last chapter of the monograph is 'to enquire into what indicators of [company] performance are potentially significant to investors for purposes of evaluating the worth of securities' (p. 147). This enquiry comes rather late in the day since the recommended financial reporting model has already been developed at length. The conclusions here may well justify the development of a model not explicitly linked to the portfolio selection model of investor behaviour with which the study began; but it would have been useful to know this earlier. The main conclusions seem to be :

- (i) 'the methodology of investment evaluation is in an unsettled state';
- (ii) in so far as company financial performance follows a random walk, 'measures of immediate past performance provide, in the absence of specific information to the contrary, the best estimate of performance in the immediate future period and can be expected to be impounded in share prices'. But there is some evidence that brokers' profit forecasts are significantly better than crude adaptations of past profits. And there is still doubt as to whether the random walk is a characteristic only of conventional accounting profit and whether that profit measure is worth forecasting anyway.

This monograph was not easy reading. As a result I may have been less than fair to it by not appreciating some of the links between its sections. Its heart is in the right place; this makes its imperfections particularly frustrating.

Peter Bird

Research in Accountancy – a strategy for further work. R. I. Tricker. Social Science Research Council, 1975. 55 + xvii pp. £1.

On 29th November 1974, the Management and Industrial Relations Committee of the Social Science Research Council sponsored a conference of accountancy academics to discuss the present state and future needs of accountancy research in Britain. Mr. Tricker's report is the outcome of that conference, partly reflecting the views of the participants and also partly presenting the results of the author's own investigations.

The report opens with a brief sketch of the scope and development of accounting: this is directed mainly at non-accountant readers. The second chapter, 'Accountancy Research in Britain Today', surveys the present state of the art, and provides some devastating comments on current research projects: 'In some cases the amount of empirical exploration was no greater than a journalist might use for a descriptive piece in a quality Sunday newspaper . . . It all strikes one as rather conservative and staid.' (p. 20). This apparently sorry state of affairs is attributed to five causes: lack of time, lack of research experience, lack of funds, lack of motivation and the pressure to conform to established disciplines, such as economics. The third chapter surveys some of the environmental pressures determining current research needs in accountancy (inflation, increasing government intervention in the economy, EEC membership, etc.). Chapter 4 outlines five 'Opportunities for Research' (understanding the use of information in the management decision, understanding the use of information about the enterprise by external parties, reporting of forecast data, understanding accounting standards as a socio-political process, not-for-profit organisations, accounting history, accountancy as a measurement process). Finally, chapter 5 outlines 'A Strategy' for future research. This strategy makes a rather arbitrary distinction between 'Research into accountancy principles and practice' (for which a 'teaching hospital' relationship between professional firms and academic bodies is suggested) and 'Research by the accounting theorist'. On the practical aspects of research, Mr. Tricker proposes that the 'critical mass' problem of small research groups should be solved by improving contact between groups rather than by attempting to concentrate resources in a few large departments. He also proposes the training, or re-training, of researchers by means of secondment and study leave.

It can be seen from this brief summary that the Tricker Report covers a vast field in a short space.

Furthermore, it was prepared in a relatively short period of time. This brings us to an obvious criticism of the report: in many ways it exemplifies the weaknesses of accountancy research which it claims to identify. For example, the evidence for the very strong criticisms of current accountancy research, quoted earlier, is based mainly on the International Register of Research in Accounting and Finance, rather than the author's own research. No evidence is given of the (possibly low) response rate achieved by the compilers of this register, and, in any case, the type of information which it contains does not provide an appropriate basis for strong qualitative judgements of the type quoted earlier. The evidence adduced elsewhere in the report is also rather thin. For example, the topics suggested for research in chapter 4 reflect mainly the personal interests of the seventeen individuals (other than the SSRC representatives) who attended the meeting in November 1974 (this group included no Polytechnic representatives and nobody from a Scottish University). There are also weaknesses in the writing of the report. The author occasionally makes methodological statements which are difficult to understand, e.g. 'Opinion may not masquerade as research, unless statistically significant' (p. 26) or 'testing empirically in statistically significant populations' (p. 46), and sometimes he makes *ex cathedra* statements of fact which are difficult to accept, e.g. 'The accounting textbook, typically, bears no reference to the information needs of the user of accounting reports' (p. 32), or (referring to research into accountancy principles and practice) 'There is no need for a conceptual framework and the knowledge can stand alone from other subjects and disciplines' (p. 45).

However, despite its obvious limitations, the Tricker Report must surely give all accountancy researchers a necessary reminder that much needs to be done to improve both the quantity and the quality of their work. The reviewer's anxiety is that, in doing this, the author may have over-stressed the limitations of current research and, unwittingly, have given the SSRC Committee the impression that accountancy research is generally lacking in academic merit. An optimistic view of the facts which Mr. Tricker relates is that the deficiencies of current accountancy research (e.g. shortage of experienced research workers) are the natural growing pains of a basically healthy and rapidly expanding area of academic endeavour. These deficiencies should be seen as offering opportunities for further work, which should be supported by organisations like SSRC, not as an excuse for withholding support.

Geoffrey Whittington

Contributors to Accounting and Business Research

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D. A. Eggington, BSc(Econ), FCA, AIB, is Senior Lecturer in Accounting at the University of Bristol. He taught at the University of Minnesota in 1970-1971. He is co-author of *Management Accounting: A Conceptual Approach*, and is author of a forthcoming book on *Accounting for the Banker* (Longman, 1977).

Simon Keane, MA, LLB, PhD, CA, is Senior Lecturer in Business Finance at the University of Glasgow. His research interests are primarily in the field of investment appraisal and he has written several papers on the subject. In 1972 he visited the Finance and Accounting Departments of a number of leading North American Universities to study course contents and teaching methodology.

M. Knoll graduated from the Hebrew University of Jerusalem with LL.M and MSc(Econ) degrees. He is a Doctor in Economics (*magna cum laude*), Gutenberg University, Mainz. He is a senior lecturer in accounting and auditing at the Recanat Graduate School of Business Administration, Tel-Aviv University and at Bar-Ilan University, and also a certified public accountant (Isr.) and a partner in the firm of Kesselman and Kesselman, CPAs. He is a member of the Committee for Accounting Principles and Financial Reporting of the Institute of Certified Public Accountants in Israel and is active on other committees of the Institute. He is author of *The Information Value of the Annual Financial Statements of Public Companies in Germany and Israel* and has published articles in various professional periodicals.

Niall Lothian, BA, CA, joined the Department of Accountancy and Finance, Heriot-Watt University, as a lecturer in 1973, after service with Arthur Young McClelland Moores & Co. He has a continuing interest in the nature and use of language in accounting; his main research commitment at present is in the field of scientific method and its rôle in the structure of accounting theory.

Andrew M. McCosh, BSc, MBA, CA, has been Professor of Management Accounting at Manchester Business School since 1971. He has served on the faculties of Michigan and Harvard Business Schools. He is co-author of *Practical Controllershship* (Irwin) and of the forthcoming *Decision Support Systems* (Ronald), and of many professional articles. He is also responsible for two companies active in the cost-finding and cost analysis field, one in the USA and one in the UK.

R. C. Morris, BA, MSc, FCA, is a graduate of Bristol University and the London School of Economics, and is now Lecturer in Accounting at the former. After qualifying as a chartered accountant he worked as a consultant with the Economist Intelligence Unit. Amongst his publications on accounting topics are monographs on the relevance of the EEC's fourth directive, funds statement practices in the UK, and (as co-author) managerial experience in Brazil under inflationary conditions. He has also recently completed empirical studies on the impact of inflation accounting on share prices and the accuracy of brokers' profit forecasts.

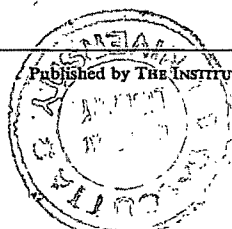
G. D. Newbould, BCom, MA, PhD, is Professor of Managerial Economics at the Management Centre, University of Bradford, heading the subject areas of economics, business policy and international business. He is the author, or co-author, of four books and over thirty articles in academic journals. He has been Visiting Professor of Finance at the University of Witwatersrand and is visiting the University of Western Ontario in 1976.

Stephanie Stray graduated from the University of York in 1974 with an honours degree in economics and statistics. She has since been employed as a Research Assistant in Economics at the University of Bradford Management Centre.

Richard F. Vancil is Professor of Business Administration and Chairman of the Control Area Faculty at Harvard Business School. He received his BS from Northwestern University in 1953 and his MBA (1955) and DBA (1960) from Harvard University. He joined the HBS Faculty as an Instructor in 1958, and was appointed Professor in 1968. His professional interests are in the broad field of management systems, focusing particularly on resource allocation systems and measurement systems. He is a co-author of *Managerial Economics* (Irwin, 1973) and *Management Control Systems* (Irwin, 1972), as well as numerous other articles and books. He is active as a corporate director and management consultant, being a director of several mutual funds established by Connecticut General Insurance Company, a director of Great Southwest Corporation, and chairman of MAC Inc., a management consulting firm.

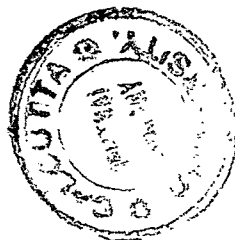
Geoffrey Whittington is Professor of Accounting and Finance in the Department of Economics, University of Bristol. From 1972 to 1975 he was Professor of Accountancy and Finance in the University of Edinburgh and previously was Fellow and Director of Studies in Economics at Fitzwilliam College, Cambridge and Senior Research Officer in the Department of Applied Economics, Cambridge. He is currently a member of the Meade Committee, set up by the Institute for Fiscal Studies to investigate the United Kingdom tax structure. His other research interests include the theory and measurement of business income and empirical studies of the growth, finance and economic performance of quoted companies in the United Kingdom.

K. W. Wilson, BSc, MSc, graduated from the University of Bradford in 1973 with an honours degree in economics and from the University Management Centre with a master's degree in 1974. He has since worked as a Research Assistant in Managerial Economics at the Management Centre and will be taking up a lectureship at the University College, Cardiff, in October 1976.



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A Pragmatic Defence of Replacement Cost*

K. P. Gee and K. V. Peasnell

In a recent review of developments in financial accounting theory during the 1960s, Professor Carl Nelson took as his 'ideal' accounting measure present value. The attempts of accounting theorists to develop objective measurement models were judged by him according to the closeness of their approximation to present value. In his analysis of replacement cost, he asserted that:

'The economic theory of accounting theorists appears to be that of the economist in the pre-Austrian days, which is obsolete indeed . . . To reject historical cost with scorn and then to accept replacement cost is the height of naivete.'¹

This challenge to replacement cost's claim to be a meaningful economic valuation basis has been met in a variety of ways (e.g. see the various arguments presented in chapters 4, 6 and 10 of the recently published Sandilands Report).² The concern of this paper is to re-examine the defence of replacement cost provided by Value to the Firm theory.³

In the final analysis the determination of the valuation concept(s) most appropriate in accounting depends on the purposes which company financial statements are expected to serve. Following the ASC

discussion paper, 'The Corporate Report',⁴ we believe that a major function of corporate reports is to communicate economic *measurements* of the resources and *performance* of the reporting entity. A fundamental postulate of our analysis follows from this function (which we believe would command widespread support amongst accountants and financial statement users), namely that present value is inadequate as an accounting measurement concept, regardless of its validity as *the* transcendent valuation concept. It is deficient, firstly, for the reason that it is a 'pure' valuation; as Chambers says: 'valuations are subjective, comparative, temporal, anticipatory, and beyond enquiry'.⁵ Secondly, a concern with performance implies *ex post* measures of profit and financial position; economic income and present value are *ex ante* and thus cannot throw light on performance.⁶

This line of reasoning, coupled with the now fairly general recognition that historical cost is largely irrelevant to the assessment of the entity's resources and its performance, seems to indicate the need for market-validated measurements of financial position and profit. 'The measurement of changes in market

*An amended version of a paper presented to the Northern Accounting Group meeting of the Association of University Teachers of Accounting held at Wolverhampton on 11 September, 1975. Our thanks are due to the participants at that meeting, to our colleagues at Lancaster and to the editor and (anonymous) referee of *Accounting and Business Research* for their helpful comments.

¹C. L. Nelson, 'A Priori Research in Accounting' in *Accounting Research 1960-1970: A Critical Evaluation*, N. Dopuch and L. Revsine (eds.), Urbana-Champaign: Center for International Education and Research in Accounting, University of Illinois, 1973, p. 11.

²*Inflation Accounting: Report of the Inflation Accounting Committee*, Cmnd. 6225, London: HMSO, 1975.

³There is an extensive and growing number of articles and books on Value to the Firm theory. The concept which it represents entered the literature as Value to the Owner, see J. C. Bonbright, *The Valuation of Property: A Treatise on the Appraisal of Property for Different Legal Purposes*, Charlottesville, Virginia: The Michie Company, 1965

reprint, first published in 1937, p. 71. For the development of this theory in the accounting literature, see D. Solomons, 'Economic and Accounting Concepts of Cost and Value', in M. Backer, (ed.), *Modern Accounting Theory*, Englewood Cliffs, New Jersey: Prentice-Hall, 1966, pp. 117-140; the introduction in R. H. Parker and G. C. Harcourt, (eds.), *Readings in the Concept and Measurement of Income*, London: Cambridge University Press, 1969, pp. 15-20; F. K. Wright, 'A Theory of Financial Accounting', *Journal of Business Finance*, 2, Autumn 1970, pp. 57-69; E. Stamp, 'Income and Value Determination and Changing Price-Levels: an Essay Towards a Theory', *Accountants' Magazine*, June 1971, pp. 277-292.

⁴Published July 1975, pp. 28, 77.

⁵R. J. Chambers, *Accounting, Evaluation and Economic Behavior*, Englewood Cliffs, New Jersey: Prentice-Hall, 1966, p. 56.

⁶'Economic income . . . is a case of counting one's chickens before any is hatched', A. D. Barton, 'Expectations and Achievements in Income Theory', *Accounting Review*, October 1974, p. 672.

value can be accomplished, at least theoretically, on an objective basis and is not dependent on the subjective estimates management or its subordinates might choose to report'.⁷ There remains, however, the problem raised by Carl Nelson concerning the economic significance of market-validated measures of financial position.

The approach adopted in this paper is to show that in all but a few relatively minor situations we can do no better, on an individual asset level of aggregation, than to represent the present value of an asset at current replacement cost. Following Parker and Harcourt, we '... interpret current replacement cost not as the cost of replacing the actual physical asset used by the firm but as the cost of currently acquiring the services provided by the asset'.⁸ The paper is divided into two sections, the first dealing with the valuation of individual assets and the second with the aggregation of Values to the Firm.

I Value to the firm: individual assets

The principle underlying the Value to the Firm approach is to value each tangible asset of a going concern at the sum of money that the firm would lose if it were to be deprived of that asset and thereafter took action to minimise the loss it had sustained. Here the relevant comparison is between the cash flow arising from the ownership of the asset and the flow that would arise if the asset were not owned by the firm. 'Deprival value' is a convenient term devised by Professor Baxter⁹ for this comparison, but as it could easily be taken to imply actual deprivation, it will not (so far as possible) be used in this paper. It cannot be stressed too strongly that we are dealing with circumstances in which actual deprivation has not taken place and indeed will not (so far as is known) take place, implying that no element of distress is involved in the notion of deprival.

One difficulty with the deprival principle is that it may on occasion point to the discounted present value (PV) of an asset as being the Value to the Firm of that asset. If, as we argue, the main purpose of using the Value to the Firm approach is to avoid using PV and to provide a means of choosing between entry and exit market prices, then this is a serious problem. Given that PV is inadmissible as a measure of value, the choice is seen to lie between replacement cost (RC) and net realisable value (NRV). (Sandi-

lands, p. 60, recognises this problem but offers neither a theoretical nor a practical solution.) Our immediate task is therefore to see if we can avoid using PV while remaining as faithful as possible to the deprival principle.

Parker and Harcourt following Bonbright and Solomons derive the rule: 'Value to the Firm = RC, except where $RC > PV$ or $RC > NRV$, when [Value to the Firm] = PV or NRV , whichever is the greater'. For our purposes, in determining for an individual asset whether its value is to be taken as NRV or RC , the following variant of the rule is to be applied:

Asset value = NRV if (higher of PV and NRV) $< RC$
 = RC if (higher of PV and NRV) $> RC$

The first line of our rule will later be the subject of specific comment. For the moment, though, the rule will simply be illustrated by reference to the fixed assets of a profitable firm. These would be expected to satisfy the condition $PV > RC > NRV$, so that their Value to the Firm = RC . This valuation reflects the obvious point that the maximum loss a firm sustains when it loses a fixed asset which is worth replacing is the cost of replacing that asset.¹⁰

The three basic valuation concepts of PV , RC and NRV can for a given asset be ranked in any one of six possible ways. Sandilands (p. 58) went through the rankings and assigned to each a case number; for convenience these numbers will be followed here. The six possible rankings are shown below, with their Sandilands numbers. (Rankings are from the top down, so that Case 1 refers to an asset for which $NRV > PV > RC$, and so on.)

Case 1	Case 2	Case 3
NRV	NRV	PV
PV	RC	RC
RC	PV	NRV
Case 4	Case 5	Case 6
PV	RC	RC
NRV	PV	NRV
RC	NRV	PV

Focusing on Cases 3 and 5 for a moment, application of our valuation rule above gives Value to the Firm = RC for Case 3, yet in contrast Value to the Firm = NRV for Case 5. The critical point

⁷E. O. Edwards and P. W. Bell, *The Theory and Measurement of Business Income*, Berkeley and Los Angeles: University of California Press, 1961, p. 44.

⁸Op. cit., p. 19.

⁹W. T. Baxter, *Accounting Values and Inflation*, London: McGraw-Hill, 1975.

¹⁰Strictly, Value to the Firm is here the maximum loss that the firm would sustain if it were to be deprived of the asset in circumstances in which immediate replacement was possible without diminishing the present value of the firm as a whole. For asset valuation purposes deprival is wholly notional, so that any loss of profits which could actually flow from the loss of the fixed asset would not enter into that asset's deprival value. Amplification of this point is to be found in C. J. Warrell, 'The Enterprise Value Concept of Asset Valuation', *Accounting and Business Research*, Summer, 1974, p. 221.

here is that Cases 3 and 5 differ only in their relative rankings of PV and RC; in both cases PV and RC are in excess of NRV. This exposes immediately a fundamental problem concerning Value to the Firm, which may be expressed as follows: Where buying price (RC) exceeds selling price (NRV) accountants in judging what valuation concept to apply to a given asset are rendered dependent upon subjective evaluations of its present value given to them by managers.¹¹ Put in another way, if $RC > NRV$, Value to the Firm can be NRV or RC depending upon the relative position of PV, whereas if $NRV > RC$ then Value to the Firm must be RC, irrespective of the relative position of PV. (This latter case must accommodate many items of finished goods stock, for which $NRV > RC$ can be fairly safely assumed.)

Returning to the specific example of Cases 3 and 5, an asset with its NRV less than either its PV or RC will be valued at RC if managers say that its PV exceeds RC, and at NRV if they say the reverse. This dependence upon subjective PV estimates is the basis for Professor Yoshida's assertion¹² that the theory must fail to achieve its goal of providing an *objective* approximation to Value to the Firm.

It is the contention here that this assertion is overly pessimistic, and that when an economic interpretation is applied to Cases 1-6 a valuation rule emerges which dispenses with the need to ask management for their guesses concerning PV.

An economic interpretation: Cases 1-4

To support this contention, it is necessary to consider the six cases in turn. The first four of them in fact present very little problem. Cases 3 and 4 are wholly non-controversial, in that since $PV > RC$ the action that would minimise loss consequent upon the deprival of the asset concerned would be its immediate replacement. Case 1 has given more difficulty in the literature, with Yoshida¹³ asserting that it would not in this case pay the firm to replace the asset for use if it were lost since its economic (present) value is lower than NRV. This assertion is invalid, the appropriate criterion being that it will pay to replace for use providing $PV > RC$, which is so in Case 1. Indeed, Case 1 may be described as a 'hybrid' case in that both replacement for use and replacement for immediate resale are profitable (the former because $PV > RC$, the latter because $NRV > RC$).

Case 4 is also a hybrid case, though here the relative profitability of replacement for use and replacement for resale is the opposite of that in Case 1.

Case 2, although not particularly difficult, has also given rise to a certain amount of confusion. For example, in a recent article Popoff¹⁴ argues that since $RC > PV$ the asset in Case 2 should not be replaced; it is true that it should not be replaced for use, but since $NRV > RC$ it should be replaced *for immediate resale*.¹⁵ Thus RC is the appropriate measure of deprival value in this case, not NRV as Popoff claims.

There is, though, one potential source of confusion here. Suppose that a firm holds an asset A, for which $NRV > RC > PV$ (putting it in Case 2). Suppose further that the lowest cost way of replacing asset A's remaining service potential would involve purchasing asset B, for which $RC > NRV$. The only profitable employment of asset B would be to hold it for use, not to resell it. Thus asset A could profitably be replaced either with another asset A for resale, or with asset B for use. If only one of these replacement activities could be carried out, the choice would hinge on whether NRV minus RC for asset A exceeded PV minus RC for asset B at the time of replacement. But provided NRV minus RC for asset A was positive, the deprival value of asset A would remain equal to RC - the loss consequent on being deprived of asset A would still be wiped out if asset A were immediately replaced and this replacement immediately resold. The possible presence of a still more profitable replacement for use involving asset B does not alter the issue.

Taking these points together, it is clear that in all of Cases 1-4 deprival value is given by RC . At this stage, it is also worth noting that *for fixed assets Cases 1, 2 and 4* in which the asset's selling price (NRV) exceeds its buying price (RC) *are all likely to be extremely rare*. It is most improbable that a firm holding a fixed asset would be able to sell it and replace it at a lesser cost with another asset offering an equivalent stock of services. If opportunities for such transactions were to exist, it is likely that they would swiftly be exploited by active traders in second-hand fixed assets, rather than remaining visible to firms not normally dealing in second-hand markets. No mention is made of this point in Sandilands (e.g. pp. 59-60).

¹¹No mention is made of this important point by Sandilands, although the inherent subjectivity of asset valuations is emphasised on p. 139 of the report.

¹²H. Yoshida, 'Value to the Firm and the Asset Measurement Problem', *Abacus*, Vol. 9, No. 1, 1973, p. 20.

¹³Ibid., p. 18.

¹⁴B. Popoff, 'The Informational Value of Replacement Cost Accounting for External Company Reports', *Accounting and Business Research*, Winter 1974, p. 68.

¹⁵It is assumed, of course, that NRV is taken net of all costs involved in realisation, including the cost of capital tied up until realisation. This, being an opportunity cost, will not be recorded in a conventional accounting system.

The 'rogue' Cases 5 and 6

The above argument implies that for fixed assets only Cases 3, 5 and 6 are at all plausible, which is rather unfortunate since Cases 5 and 6 are 'rogue' cases raising considerable difficulties. In both of them (higher of PV and NRV) < RC, which by the rule advanced earlier gives Value to the Firm = NRV in both cases. The valuation of fixed assets at NRV raises (as will be shown) considerable difficulties; on top of these are piled difficulties of distinguishing between Cases 3, 5 and 6 which arise from the fact that PV estimates are not in any sense market-validated. It may be possible, however, to make some kind of inference from management's conduct about the relationship between (its view of) PV and other magnitudes (notably NRV). This line of thought is to be pursued further.

In the meantime, a start may be made on the 'rogue' cases by considering Case 6. Where $RC > NRV > PV$, as here, deprivation value must be NRV. However, the practical significance of this Case 6 for a going concern¹⁶ is almost certainly trivial. This is so for a number of reasons.

For a start, managers are often likely to have great difficulty in identifying assets for which Case 6 holds, since with infrequently traded assets estimates of NRV are likely to have such a dispersion as to make the Case 5-6 boundary very unclear. Even where Case 6 assets are unequivocally identified by managers, there are reasons for believing that such assets will figure very seldom in the balance sheet. These reasons vary as between an actively profit-seeking firm and a firm in which motives other than profit-seeking play a significant role.

Dealing with these two types of firm in turn:

(i) In a profit-seeking firm, an asset for which Case 6 is known to hold will (normally) already have been sold, since its NRV exceeds its PV. The cash flow from selling it exceeds the present value of the cash flow obtainable from continuing to operate it, and the actively profit-seeking firm will have seized this opportunity. It is true, as

Mrs. Wanless¹⁷ has pointed out, that lags in adjustment to market changes may result in the occasional Case 6 asset remaining 'stranded' in a profit-seeking firm at the balance sheet date, awaiting implementation of the opportunity for its sale. But such occasions in genuinely profit-seeking firms are likely to be rare, and their quantitative consequences insignificant.¹⁸

(ii) In a firm where managers are guided by motives other than profit-seeking, Case 6 assets may remain unidentified, being treated instead as Case 5 assets out of an erroneous belief (i.e. one which with the benefit of hindsight turns out to be wrong) that their PV exceeds their NRV. Since managerial assertions about PV are inherently unverifiable, accountants will have no option but to take management's assertions as to whether assets fall into Case 5 or 6 at their face value – even where the identification of an asset as falling into Case 5 derives from a faulty comparison of NRV and PV.¹⁹ The existence of such a comparison may be inferred simply from the decision to continue to operate an asset (implying a $PV > NRV$) or to cease to do so (implying a $NRV > PV$). The possibility of making these inferences will be found to be of importance when considering Case 5.

Points (i) and (ii) above lead to the conclusion that Case 6 will seldom arise as a serious practical issue. Case 5, however, cannot be dealt with so easily. It refers to the very common situation in which if the firm were to be deprived of an asset it would not buy a replacement, but yet the present value of that asset to the firm in its current use exceeds the sum that could be obtained from selling it.

Using the valuation rule which was postulated at the start of this paper, Value to the Firm is given as NRV. If this NRV valuation is to be challenged, there

¹⁷P. T. Wanless, 'Reflections on Asset Valuation and Value to the Firm', *Abacus*, Vol. 10, No. 2, 1974, pp. 160-164.

¹⁸The question which accountants may have to ask themselves is whether in a particular situation the value of assets such as outmoded stock identified as awaiting sale is material. If this is the case, then it will be necessary to make an exception to our proposed replacement cost value rule (q.v.), and value these Case 6 assets at their net realisable value.

¹⁹Such a faulty comparison may arise out of inertia or out of a desire to retain a stock of Case 6 assets as a form of budgetary slack, to be 'found' and sold when budget constraints are tightened, as a means of meeting those constraints. Such a practice would be akin to the non-implementation of available process improvements to provide a reserve of potential cost reductions, as reported in M. Schiff and A. Y. Lewin, 'The Impact of People on Budgets', *Accounting Review*, April, 1970, p. 263.

¹⁶A firm in liquidation is in the position that it would not replace any of its assets, so that $RC > PV$ throughout. The fact of its liquidation indicates that it is considered unprofitable to operate until the existing assets are exhausted, implying $NRV > PV$ throughout. It must also be true that $RC > NRV$ for each of its assets, since it would otherwise be profitable (irrespective of the liquidation) to buy assets for immediate resale. These three inequalities together identify the assets of a firm in liquidation as being in Case 6. Thus the Value to the Firm approach arrives at the sensible conclusion that the assets of a firm in liquidation should be valued at NRV. (See also Sandilands, para. 158.)

is no option here but to challenge the valuation rule itself.

Quite generally, the deprival value of a Case 5 asset is its PV, since this is what a firm holding a Case 5 asset would stand to lose if it 'lost' that asset. Given the inability to 'observe' PV for an individual asset, the question becomes one of whether RC or NRV provides a more appropriate surrogate for PV. Although RC is the less conservative basis for valuation, an extremely strong case can be made out against valuing Case 5 assets at NRV on the following grounds:

(i) Case 5 assets will frequently be fixed assets with substantial costs of transportation, such as blast furnaces. The NRV of an asset of this type may well be *negative*, in the sense that it would be necessary to pay people to take it away. But so long as an item owned by a firm is believed to have a positive PV, it clearly remains an asset to that firm within any intuitively reasonable meaning of the word 'asset'. Thus valuation at NRV of (say) a blast furnace would imply that it is an asset with a *negative* value merely because it falls into the category $RC > PV > NRV$. Such an absurd valuation could persist for many years, given the relatively long fixed asset lives which typify British industry.

(ii) If it were decided to value Case 5 assets at NRV, this process might well be lengthy, costly and open to manipulation. Initially, there would be the problem of choosing the level of aggregation at which to value the assets. Are they to be valued at group level (a whole factory at once), individual level (machine by machine within the factory) or component level (each part of each machine at its separate NRV)? The answer in principle may be to value at that level which maximises total NRV – which merely invites the question as to how long a search is to be conducted to find that level. Where an asset is traded only rarely it will not have a well-established market price, so that efforts to find an NRV for that asset may be fruitless as well as costly. It is also possible to conceive of serious income manipulation, since a firm could 'increase' the NRV of its end-period assets relative to its beginning-period assets simply by searching more diligently for the best market price at the end of a period than it did at the beginning.²⁰ In effect, there is no 'given' net resale price; hence it is difficult to see what NRV 'market validation'

means in such a situation.

These are two arguments against the use of NRV in Case 5; a more positive argument may also be put for the use of RC. This rests upon the difference between Case 5 and Case 6 on the one hand, and between Case 5 and Case 3 on the other. A rather subtle distinction may be made between these pairs of cases, as follows:

(i) Case 5 differs from Case 6 in that Case 5 has $PV > NRV$ while Case 6 has $NRV > PV$. They are otherwise identical ($RC > NRV$, $RC > PV$ in both cases).

(ii) Case 5 differs from Case 3 in that Case 5 has $RC > PV$ while Case 3 has $PV > RC$. They are otherwise identical ($RC > NRV$, $PV > NRV$ in both cases).

Case 3 and Case 6 have already been discussed; deprival value in each case is as follows:

Case 3: Deprival value = RC

Case 6: Deprival value = NRV

If in Case 5 RC is adopted, this will lead to problems of distinguishing between Case 5 and Case 6 (where valuation is at NRV). But if in Case 5 NRV is adopted, this will lead to problems of distinguishing between Case 5 and Case 3 (where valuation is at RC). The former problems are preferred to the latter, i.e. it is inherently easier to distinguish between Case 5 and Case 6 than it is to distinguish between Case 5 and Case 3.

The reason for this is very simple. Both distinctions demand knowledge of *management's* evaluation of PV; for the Case 5 – Case 6 distinction such knowledge is in principle continuously available; for the Case 5 – Case 3 distinction it is not. If an asset is still in service, it can only be because in management's eyes its $PV > NRV$; if it is not in service, it can only be because in the same eyes its $NRV > PV$. Management may be deemed to evaluate continuously the PV/NRV relationship, and the results of its evaluation have clear implications. If an asset is still in service ($PV > NRV$) then it falls into Case 5; if it is withdrawn from service and awaiting sale ($NRV > PV$) then it falls into Case 6.

The Case 5 – Case 3 distinction, however, rests upon the relationship between PV and RC. Unlike the PV/NRV relationship, this is difficult to observe. Management is only likely to evaluate the relationship between PV and RC when called upon to replace an asset of whose services it has *actually* been deprived; but incidents of actual deprivation are not

²⁰The relationship between market prices and search costs is explained more fully in G. J. Stigler, 'The Economics of Information', *Journal of Political Economy* (1961) reprinted in D. M. Lamberton, (ed.) *Economics of Information and Knowledge*, Penguin, 1971, pp. 61–82. For a discussion

of this problem in the context of accounting valuation, see K. V. Peasnell, and L. C. L. Skerratt, ICRA Occasional Paper No. 8, *Current Cost Accounting: The Index Number Problem*, Lancaster: International Centre for Research in Accounting, 1976, Appendix A.

frequent (hence the dependence of deprival value on *notional* deprivation). It is not possible to say what management thinks concerning the PV/RC relationship for an asset unless management actually has an opinion about this – and it is unlikely to have such an opinion unless it is actively contemplating replacing the asset concerned. The irony here is that in both Case 3 and Case 5 $PV > NRV$, i.e. these are precisely the cases in which replacement would *not* be contemplated.

Thus adopting RC as a surrogate for PV in Case 5 entails making only the relatively simple Case 5 – Case 6 distinction, where adopting NRV would involve the near-impossible Case 5 – Case 3 distinction. On this, as well as the two more general objections to NRV stated earlier, the argument for RC valuation in Case 5 rests.

A replacement cost valuation rule

The crux of the argument in the first section of this paper has now been reached. The rule for deriving Value to the Firm set up at the beginning of this paper provides a direct justification for valuation at RC in each of Cases 1, 2, 3 and 4. Case 6, though admittedly qualifying for valuation at NRV, has been shown to be difficult to detect, and to be unlikely in any case to arise under either of two alternative assumptions regarding managerial behaviour. A strong case has now been advanced for valuing Case 5 assets at RC. If this case is accepted, then RC would seem to be the most satisfactory (least unsatisfactory?) concept of market validation in five of the six possible cases (and the sixth is normally of trivial importance).

The usefulness of this conclusion is self-evident. Immediately, the problem about the subjectivity of PV estimates disappears, for all but the few assets covered by footnote 18 (q.v.) are valued at RC irrespective of the relationships borne by PV to either RC or NRV. Of course, the problem of valuation does not wholly disappear; there remains the problem of arriving at a figure for the replacement cost of the stock of services represented by a particular asset. But settling on a single valuation basis greatly simplifies matters, and avoids the risk that valuation bases will change from one period to the next, to the detriment of financial statement users wishing to make comparisons over time.

The overall argument of this Section I runs an enormous risk of being misunderstood. At the risk of repetition, it will now be summarised. All that is being asserted here is that if the assets of a going concern are to be valued on a deprival value basis, then there is much to be said for adhering to replacement cost as approximations to deprival values

well-nigh irrespective of the PV or NRV of the asset being valued. This, we think, will make the implementation of Sandilands' proposals an easier task.

II. Value to the firm: problems of aggregation

Clearly, the next task is to look at the implications for aggregate asset values of the approximation proposed in the previous sentence. If, as is proposed, replacement cost is used to value all assets except for those covered by footnote 18, what will the effect be on the total asset position? The answer is that replacement cost will tend to overstate the total value of assets as compared with a strict Value to the Firm approach, and this overstatement will tend to be larger the more Case 5 and 6 fixed assets there are in the asset structure. This section of the paper will focus upon the error involved, though it must be borne in mind throughout that the sum of individual assets each valued according to the Value to the Firm formula (i.e. VF Sum) is itself a figure of dubious economic significance.

As Professor Baxter has explained at some length,²¹ VF Sum may be above or below the present value of the firm viewed as a whole (here called Total PV). A situation in which $VF\ Sum < Total\ PV$ could simply arise because the Value to the Firm approach is limited to tangible assets,²² thus omitting specific intangibles or more generally reflecting the fact that goodwill is not impounded in the market prices of the assets held at the balance sheet date.

Difficulties become apparent in the reverse situation, where $VF\ Sum > Total\ PV$. This situation could easily arise where a firm has a number of Case 3 assets all of which must be present to enable operations to continue, yet is overall in a Case 5 position. Any one of the Case 3 assets would, if lost, be immediately replaced, but if the firm were to lose all its assets it would not endeavour to re-establish itself in that line of business.

In this situation, Value to the Firm gives an over-valuation relative to present value, and Baxter proposes dealing with this by deducting a general 'provision for obsolescence' from the asset total instead of apportioning the excess over the individual asset values.²³ Neither the general deduction nor the apportionment seem, however, to be feasible; if the size of the deductions required could be verified then

²¹Op. cit., ch. 12.

²²For a justification of the exclusion of intangibles see Wright, op. cit. A discussion of intangibles would involve issues going far beyond the scope of this paper.

²³Op. cit., p. 143.

Total PV would be known on an objective basis and the need for piecemeal valuations of individual assets would disappear.

Quite apart from the well-known problems inherent in forecasting future cash flows, the problem also arises of how to adjust the forecast flows for risk. Computing the 'certainty equivalent' premium or the risk-adjusted discount rate must involve the management in determining how the firm's cash flows will covary with the market and how investors will 'price' these covariations (estimates of which must be obtained from share price data already 'contaminated' by the market's growth expectations). Managers have no comparative advantage in providing such estimates; hence the calculation of Total PV should be viewed as the market's task, or at least as lying outside the boundaries of financial accounting.²⁴

The reconciliation of VF Sum (or any other sum of valuations) with Total PV is not possible because the latter is not known. As Edwards and Bell have pointed out,²⁵ one of the purposes of accounting is to provide measurements of actual performance which can be compared against expectations, thus making possible the (subsequent) recalculation of Total PV. Assuming the objective of the firm is to create (market-validated) wealth, the excess of Total PV over VF Sum will reflect the extent to which the firm has not yet accomplished its plans; Case 5 situations, however, for individual assets will muddy the picture because assets could under Sandilands be shown at PV, thereby effectively incorporating expectations in the accounts as though they were market-validated achievements.

A situation could arise where most, perhaps all, of the assets are viewed as falling within Case 3, when valued on an asset by asset basis, despite the firm as a whole being in a Case 5 situation. For example, a firm in a dying industry (and thus in an overall Case 5 situation) may nevertheless be inclined to replace any of its assets if deprived of any *one* of them; however, if it were deprived of *all* its assets simultaneously then it would move into a new line of business. The Value to the Firm procedure would, if the discounted present value of the firm could be determined, result in an overvaluation of the assets viewed as a collective, i.e.

$$\text{VF Sum} > \text{Total PV}$$

²⁴K. V. Peasnell, 'The Fundamental Nature and Purposes of Published Accounts of Companies, with Particular Reference to the Needs of Users and Potential Users', unpublished Ph.D. thesis, University of Lancaster, 1975, ch. 10; 'The Present Value Concept in Financial Reporting', *Journal of Business Finance and Accounting* (forthcoming).

²⁵Op. cit., ch. 2.

In this situation it is not possible to invert the reasoning of Edwards and Bell and say that the firm has 'over-achieved' its plan, in the sense of the market 'over-validating' the firm's expectations. Yet the notion of market validation views the excess of Total PV over VF Sum, i.e. where

$$\text{VF Sum} < \text{Total PV},$$

as the extent to which management's expectations have not been converted into market-validated 'wealth', where wealth means '... the total of the consistently quantifiable and verifiable aspects of a company's progress'.²⁶ Clearly, our assessment of the meaning of VF Sum depends on whether it is thought that Total PV is less than or in excess of it. This would remain true even if Total PV were to reflect the expectations embodied in the latest plan and could therefore be calculated *after* VF Sum were known (thus reflecting knowledge of latest results).

It is clear that a line of reasoning which involves using RC in all but Case 6 must do some violence to Value to the Firm theory. The importance of this, however, is diminished by the fact that aggregations of the Values to the Firm of individual assets are themselves subject to difficulties of interpretation. Moreover, use of replacement cost will help in the recalculation of Total PV; no one analysing a firm believed to have a VF Sum substantially in excess of its (conjectural) Total PV will believe that firm to be over-achieving when it is persistently reporting the subnormal returns associated with Case 5. (These subnormal returns arise in Case 5 because assets are here being valued at a replacement cost in excess of present value, thus increasing the denominator of a return on capital while depressing, through higher depreciation, the numerator of that return.)

A rejoinder to Nelson

Notwithstanding Nelson's comment (quoted at the beginning of the paper) replacement cost is not a pre-Austrian value concept. Replacement cost is the present value of an asset in the majority of (detectable) cases, while Value to the Firm is the transcendent value concept to which replacement cost relates. Having said that, the Value to the Firm of an *asset* should not be confused with the present value of the investment *opportunity* in which the asset is to be used. It should, of course, be possible to raise the level of aggregation at which assets are valued until it coincides with the boundaries of the investment opportunity. However, given the jointness of a firm's operations, this level of aggregation cannot be

²⁶Wright, op. cit., p. 61.

far below that of the whole firm. When it comes to considering the Value to the Firm of the whole firm the usefulness of the concept breaks down; calculating the replacement cost of the complete firm is scarcely less subjective an operation than calculating Total PV.

The present value concept is itself vulnerable to similar difficulties. Marginal present values of individual assets are no more additive than are the replacement costs of individual assets. Indeed, the difficulties with VF Sum are directly due to the non-additivity of the present values of individual assets entering into Value to the Firm computations.

It is also worth noticing that the VF Sum > Total PV situation, especially insofar as it reflects Case 5, is the one situation in which it would be particularly difficult to recalculate Total PV. The recalculated Total PV would have to reflect the fact that existing processes may soon be abandoned, and as a consequence be composed of conjectures concerning cash flow outcomes of decisions not yet made and from business ventures of which the firm has no past experience.

This may be contrasted with the explicit assumption made in the Value to the Firm approach that the individual assets will continue to be used as before. This assumption must make the estimation problem less difficult. It is also true that the resulting asset values can be used to evaluate the efficiency of *existing* operations of the firm whereas present value measures cannot be used for this purpose. Viewed in this light, the assumption of RC (of embodied services) as the normal valuation rule seems the best one can hope to do in the circumstances.

In advocating the use of PV for Case 5 assets,

Sandilands remains faithful to the deprival approach, but at the cost of giving too large a role to expectations. This article has tried to show that in all cases (except for Case 6 assets awaiting sale) replacement cost (of capacity) is the closest objective (i.e. market-validated) measure of the Value to the Firm of its assets. The error which may result from such an approximating procedure is, in any case, likely to be no greater than – and not likely to add to – the errors inherent in any piecemeal valuation of inter-dependent assets. Moreover, this simplifying amendment should make the task of implementing Current Cost Accounting that much easier.

Walter Taplin Prize

The Association of University Teachers of Accounting and the Council of Departments of Accounting Studies offer an annual prize of £10 for the best article published in *Accounting and Business Research*. The prize is to be awarded for the first time in respect of Vol. 6 (Nos. 21/24) 1975–76. The winning article will be chosen by the subscribers.

The prize is named in honour of the journal's founding editor, Walter Taplin.

Inflation and the Current Value Illusion*

Ronald Ma and M.C. Miller

Introduction

Inflation has become an overriding concern in the economies of the Western world. In response to the effects of inflation and changing prices in recent years on company reports, pronouncements and exposure drafts on financial statements adjusted for the change in the general price level (hereafter referred to as current purchasing power accounting or CPPA) have been issued by the accounting professions in the United Kingdom, United States, Canada, Australia and other countries.¹ An alternative approach to inflation accounting, which advocates the restatement of assets at their current values (hereafter referred to as a replacement cost dominated system or RCDS), is contained in an Australian preliminary exposure draft and in the recommendations of two government appointed committees of inquiry into accounting for inflation in the United Kingdom and Australia respectively.²

The purpose of this paper is to evaluate the competing proposals for inflation accounting in the context of relevant conceptual, feasibility and

institutional factors. While an important role exists for the normative analysis of alternative external accounting systems, the evaluation of potentially mandatory accounting standards must take into account also the efficacy of the systems in actual operation, given feasibility and institutional constraints. The authors attempt to include cost-benefit considerations in their examination, and to evaluate whether a switch to a current value system can be justified taking costs as well as benefits into account.

No single accounting system can be considered ideal with the present abysmal lack of knowledge of users' objectives and their decision models. But it is believed that the case for reporting current values in the financial statements has been overstated for a variety of reasons. Such values have important defects including lack of additivity in data employed in income determination, limited use for investors' decision making and adherence to an inappropriate capital maintenance concept. It is proposed instead that serious consideration be paid to implementing a much needed reform of the existing body of generally accepted accounting principles, extending disclosure requirements, and adopting a CPPA system which employs a general investment purchasing power index (or GIPPI) in deflating the accounts. The merits of employing GIPPI are spelled out in the paper. There is a danger that as an increasing number of accounting academics and practitioners climb on to the current value bandwagon financial accounting will be misdirected from more relevant reforms.

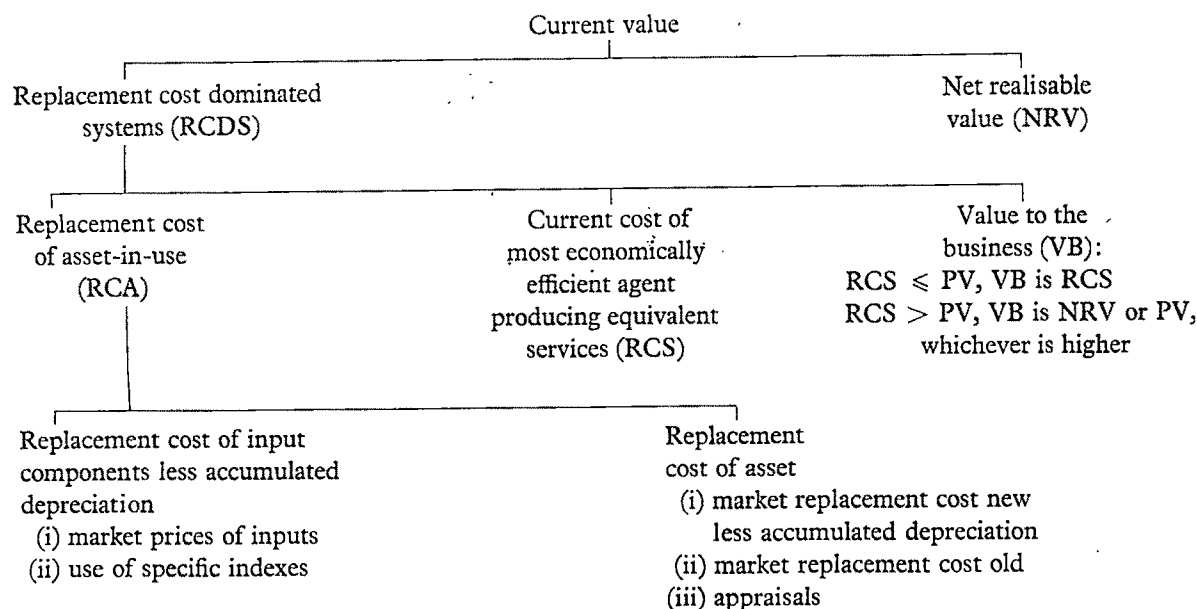
A critique of current value

A number of current value systems conforming to differing current value concepts governing asset measurement have been proposed, as shown in the facing chart:

*Revised text of a paper presented at the Accounting Association of Australia and New Zealand Annual Conference in Melbourne on 25 August 1975.

¹For example, *Accounting for Changes in the Purchasing Power of Money*, Provisional Statement of Standard Accounting Practice No. 7, The Institute of Chartered Accountants in England and Wales, May, 1974, and *A Method of 'Accounting for Changes in the Purchasing Power of Money'*, Preliminary Exposure Draft, The Institute of Chartered Accountants in Australia and Australian Society of Accountants, December, 1974.

²*A Method of 'Current Value Accounting'*, The Institute of Chartered Accountants in Australia and Australian Society of Accountants, June, 1975; Report of the Inflation Accounting Committee, *Inflation Accounting*, HMSO Cmnd. 6225, September, 1975 (hereafter referred to as the Sandilands report); and Committee of Inquiry into Inflation and Taxation, *Inflation and Taxation*, May, 1975 (hereafter referred to as the Mathews report).



The concern of this paper is mainly with the replacement cost dominated systems (RCDS). These systems may be classified further depending upon (1) the treatment accorded to so-called holding gains and losses and (2) whether the measurement standard used is money units or purchasing power units.

The proposals contained in the Sandilands report and the Australian preliminary exposure draft on current value accounting represent replacement cost dominated systems with a value-to-the-business approach to asset valuation. They both emphasise the reporting of a current operating profit which excludes holding gains and losses. The two sets of proposals both recommend the retention of money as the accounting measurement standard. The systems can be modified by adopting purchasing power units rather than monetary units as the measurement standard, as advocated in the relative price change systems of Edwards and Bell, Chambers and ASOBAT.³ This modification has not been recommended and will not be treated in this paper.

Certain important benefits are believed to flow from the adoption of current value accounting, and these are examined below. Statements 2 to 5 have particular relevance for a RCDS, statement 6 for a net realisable value system, and statement 7 for a value to the business approach.

Statement 1: Information relevant to decision making is provided.

Comment: This statement requires examination from the viewpoints of different decision makers, in particular management and investors.

Management faces a large number of complex decision situations on a continuous basis. But consider a relatively simple decision on whether to replace an existing asset-in-use A with a challenger asset B. Ignoring tax complications, the relevant factors to be taken into consideration include:

- (i) the selling price of A,
- (ii) the current and future acquisition costs of A and B,
- (iii) additional financing arrangements, if necessary,
- (iv) the quality and quantity of outputs from A and B in future periods, and the demand for the respective outputs,
- (v) the operating performance and costs of A and B, including materials usage,
- (vi) the maintenance costs of A and B, and the maintenance services provided by the respective suppliers,
- (vii) the economic lives of A and B, taking into account future investment options and available funds and technological change in the industry, and
- (viii) the respective scrap values.

The above considerations involve many probabilistic factors and subjective estimates, including the appropriate discount rate. Additional considerations which could be pre-emptive are:

³E. O. Edwards and P. W. Bell, *The Theory and Measurement of Business Income*, University of California Press, 1961; R. J. Chambers, *Accounting, Evaluation and Economic Behavior*, Prentice-Hall, 1966; and American Accounting Association, *A Statement of Basic Accounting Theory*, 1966.

- (ix) the effect on the overall efficiency of the production complex in which the asset is jointly employed,
- (x) ties with suppliers and customers,
- (xi) labour relations (for example, would new piece rates have to be set?)

The above considerations suggest that there is not a strong case for reporting to management one current value figure, whether it be replacement cost or resale price, at the end of each financial year. The case for management decision making of reporting periodically the aggregated replacement cost value of all assets (when management is not contemplating the replacement of all assets) or their aggregated resale value (when management is not contemplating the sale of all assets) is more tenuous still. It may be objected that the benefit lies in reasonably continuous recording and availability of complete current value data for management. It should be stressed that at present management has access to much current value information either in standard cost or budgetary systems or from special studies for particular decisions *as they arise*. We regard such information as essential for good management: what is questioned is the utility of a mandatory imposition to require the collection of current values for all assets and their periodical reporting.

The case for providing periodical current value information to management has been treated at some length, because the case is so often and so ingeniously argued in the literature. However, the main concern of financial accounting is not with reporting to management, but to capital suppliers. The argument of information relevance of current value data for management decision making cannot be extended *ipso facto* to investors for two reasons. First, the argument overlooks the competitive environment in which corporate reporting functions. An information evaluation approach may suffice when the accountant is directly under the control of management but any reporting to investors must be able to withstand the pressure to bias external information releases, i.e. an information control approach is required.

Second, investors *per se* take no part in the management of the firm. The investor's decision typically is confined to the buying, holding and selling of shares. His objective is to maximise the expected return on his investment. Given the investment horizon, the expected return on a share is the sum of the expected dividend(s) and the change in the share price expressed as a ratio of the share price at the beginning of the period. Investors' decisions are based on two sets of expectations: the expected returns and risks (sometimes expressed as the variability of returns) on individual securities and the expected market

behaviour as a whole. The state of the share market is determined by many factors, including developments in the national and international economies which influence the level of investors' confidence. The expected returns on individual securities are a function of future dividends and share prices, and both of these are in turn a function of future earnings. Revsine has conducted an elaborate analysis which seeks to demonstrate a causal link between asset replacement values and future earnings. His study shows that the link, if it exists, is very tenuous.⁴ The case for the periodical reporting of asset current values for investors' needs remains unproven.

It is important, of course, that the accounting report should not, intentionally or otherwise, mislead readers. There is a tendency by some writers to overstate the role of financial statements, because of a focus on the individual investor level and an assumption that accounting has a monopoly on the disclosure of financial and related data. The evidence from empirical studies is that the report, when it appears, contains little information that has not already been included in the market valuation of the firm. Investors in the long run and on average cannot expect to earn a higher rate of return than that commensurate with the associated risk. Further, an important area of finance theory, the capital asset pricing model,⁵ stresses the importance of portfolio investment, in which the investor through diversification can eliminate nearly all the specific risks associated with individual securities. The accumulated evidence suggests that the concern of accountants in the past with the role of accounting information in investors' decision making has been misplaced. This does not imply that the timely public disclosure of new information on corporate activities has trivial effects on the prevention of insider trading and the operation of the capital markets as a whole.

Statement 2: A measure of current operating profit based on current revenue less current costs is a superior performance measure.

Comment: By recording increases in the current value of assets when they occur it is possible to allocate current costs against revenue and report separately holding gains and losses as either profit and loss items or as capital adjustments. This is argued to result in a better performance measure, both for evaluating

⁴L. Revsine, *Replacement Cost Accounting*, Prentice-Hall, 1973. See, for example, the tenuous nature of the argument developed in Ch. 4.

⁵The literature on the capital asset pricing model and the related empirical studies is voluminous. A simple account is contained in J. C. Francis, *Investments: Analysis and Management*, McGraw-Hill, 1972.

management performance and assessing the economic progress of the reporting entity.

Current costs could be obtained by evaluating the most economically efficient methods of obtaining the services required to generate the revenue. This would be a measure of the technical production ability of management when a comparison is made with the costs that were incurred to obtain the revenue. However, this procedure for obtaining current costs is rarely recommended, since the operational requirements of a machine complex could be violated if all individual units in the complex were simultaneously replaced by their most efficient substitutes.⁶ As Canning has aptly commented: '... it must be emphatically asserted that adequately to consider possible future substitutions is as difficult and expensive a task as re-designing of all plant and fixed equipment – obviously not a task to be undertaken annually and obviously not a task for accountants'.⁷ There is an even more fundamental objection. The introduction of the 'most efficient substitute machine' into the accounting process will make the interpretation of financial statements more difficult. Asset values in the balance sheet would refer to assets owned and employed by the firm as well as assets owned by the firm's competitors; at the same time, the values of some owned assets would be excluded. The effect on the profit and loss statement is also serious. While the depreciation expense would be based on the current cost of a more efficient substitute, out-of-pocket operating expenses including repair and maintenance costs are the actual costs incurred on the existing production process.

As a result, current cost is usually interpreted to mean current cost in terms of the replacement cost of assets identical to those held or in use. An implication is that in the event of technological and organisational advances it is the current cost of obsolete processes that is being measured. The claim is that this assists in evaluating the existing production techniques in the aggregate. For management and investors it is difficult to demonstrate that such current costs have meaningful content if a switch to alternative modes of operations and asset usage is envisaged.

As management is continually making decisions to add incrementally to its operating assets in the light of the existing structure of input prices prevail-

ing at the time of the decision, it could be viewed as inappropriate to measure performance at a later date in terms of the changed structure of input prices prevailing at that date. If there were no stock of existing assets, management would then be free to take advantage of the altered relationships in the current costs of resource inputs. But management could be behaving in an economically rational manner in continuing to use assets that represent sunk costs. To adjust these costs up to reflect current costs of replacement is unreal in that the current costs have not been and may not be incurred.

Some writers regard the charging of cost of sales at current prices as particularly useful. However, the advantages are not clear-cut. In businesses where the anticipation of price changes in the commodities used or traded is significant, important operating profits and losses could be buried in holding gains and losses. Further, market pressures as well as equity and other considerations may not allow current sales prices to be based on costs yet to be incurred in replacing stock sold. There are leads and lags in business in adjusting prices to cost movements. Misleading signals regarding a firm's economic performance can be given using the current operating profit concept. For example, assume the price of scotch whisky increases in the UK and that Australian importers agree to sell their existing stocks which are sufficient to meet three months demand at the actual costs incurred plus a normal mark-up. It would be possible for the Australian suppliers to show a loss (on current prices) on the three months sales of existing stocks if the UK price increase is substantial. Directors and shareholders would need to be reassured that the operating loss is fictitious and is more than covered by a holding gain. The point is that *no* holding gain has been made as the potential benefit accruing to the supplier is passed on to the consumer. Such cases are not rare. In recent years large retail establishments have not infrequently issued public statements declaring that they will not charge higher current prices on existing stocks of goods bought at lower costs.

Certainly there are no definite current costs and current revenues to be associated with a particular period. Current revenues may or may not represent revenues adjusted to some level of current costs and *vice versa*. Careful interpretation will always be necessary. The problem is even more acute in the case of fixed resources. It is impossible for practical measurement purposes to define 'current costs' to mean the lowest current input prices of the most efficient combination of input factors required to produce the reported output. Therefore, current costs in the accounts fall short, in varying degree

⁶See R. Ma, 'Current Value Accounting – Promise and Reality' in *Accounting for Price and Price Level Changes*, Bulletin No. 15, Australian Society of Accountants, 1974, pp. 39–40.

⁷J. B. Canning, *The Economics of Accountancy*, Ronald Press, 1929, p. 255.

depending on the measurement procedures used, of the system's objective.

There is a genuine difficulty in interpreting holding gains and losses resulting from writing assets up (or down) to replacement cost. Using the terminology of Edwards and Bell, holding gains may be labelled 'realisable cost savings' and dissected into those realised through sale or use during the reporting period and those unrealised at the end of the period. The unrealised cost savings on essential operating assets are in the nature of adverse cost increases, the recovery of which is a matter for speculation on the relationship between factor input requirements and the demand for the firm's output. In recent years many firms seem to have been subject to adverse cost pressures not fully recoverable via product price increases. Increasing capital in respect of unrealised cost savings would be misleading if a capital increase were to be interpreted as a favourable event. Conversely, a fortuitous drop in the price of a raw material results initially in unfavourable signals: both closing stock and revaluation reserve will be written down, although the event could have favourable consequences for the firm.

A counter argument to the above discussion is that historical cost or CPPA is capable of producing more misleading signals in measuring performance than current value approaches. This is debatable. The real issue is whether arbitrary current value data are a significant improvement on arbitrary historical cost or CPPA data. Interminable debate over allocation assertions merely reinforces Thomas' conclusions that they cannot be conclusively defended and that they 'do not reflect the states and activities of firms to which they purport to refer; instead, they are mere phantasmagoria that we project upon the world'.⁸

Statement 3: Adequate funds are retained through charging current costs to revenue for the replacement of assets consumed in production.

Comment: Assuming that holding gains or realisable cost savings are treated as non-distributable equity adjustments, this claim can be shown to be partially true. However, considerably more is involved to achieve the stated objective than is provided for in most current value systems, as pointed out by Wright in his 'depreciation gap' article.⁹

The real question is whether in formulating profit measurement rules priority should be given to the maintenance of the productive capacity of the

firm in terms of its specific assets. Providing for the retention of funds in this matter is of little use if, because of changes in technology and consumers' tastes, assets are rarely replaced by identical assets. A simpler and more effective alternative in accord with the economic goals of industry and society is proposed in a subsequent section.

Statement 4: Tax on current operating profit is more equitable than tax on historical cost income.

Comment: The anticipated benefits of a lower burden of taxation in the corporate sector (as an outcome of some accounting system other than historical cost) are illusory. Income and corporation tax represent a transfer of funds from the private to the public sector, mainly for the purpose of raising government revenue, and a lower tax levy on one company will in all likelihood be compensated for by a higher levy on another. It is not readily evident that a company whose factor costs have risen sharply should have part of its tax burden (under the present tax system) shifted and borne by another company whose factor costs have not increased at the same rate. One might take the uncharitable view that the former firm has made the wrong decision in the past.

Statement 5: Current value financial statements have predictive potential.

Comment: This assertion is controversial, and is regarded as an erroneous interpretation of the objectives of current value accounting by some proponents, e.g. Chambers. Nonetheless there is evidence of strong support for its belief. For example, it has been stated that current values 'possess a high degree of relevance for many uses in which prediction is prominent'.¹⁰ The only in-depth study that the present writers are aware of is the *a priori* analysis of Revsine.¹¹ His conclusions are tentative; they neither reject the claim nor provide any convincing support. Some empirical work has been done, but the results too are inconclusive and suffer from the methodologies employed.¹² It is difficult, perhaps impossible, to subject such claims to empirical testing for a number of reasons. For example, control experiments cannot be devised, the accounting measure is at best a single variable among a host of other mainly uncontrollable input factors that influence the outcome, and the

⁸A. L. Thomas, *The Allocation Problem: Part Two*, Studies in Accounting Research No. 9, American Accounting Association, 1974, p. 162.

⁹See F. K. Wright, 'Current Value Accounting and the "Depreciation Gap"', *Australian Accountant*, August, 1975.

¹⁰*A Statement of Basic Accounting Theory*, op. cit., p. 30.

¹¹Revsine, op. cit., Chs. 4 and 5.

¹²For example, W. Frank, 'A Study of the Predictive Significance of Two Income Measures', *Journal of Accounting Research*, Spring 1969, and J. K. Simmons and J. Gray, 'An Investigation of the Effect of Differing Accounting Frameworks on the Prediction of Net Income', *Accounting Review*, October, 1969. For a criticism see M. N. Greenball, 'The Predictive-Ability Criterion: Its Relevance in Evaluating Accounting Data', *Abacus*, June, 1971.

test is inescapably a joint test of the input variable and the particular decision model employed in the test.

Statement 6: Information on asset resale prices is essential to protect shareholders in take-over situations, and to protect creditors generally.

Comment: Take-overs occur for many reasons.¹³ The threat of take-over bids is a major shareholder protection against inefficient management. The evidence suggests that the majority of take-overs are not motivated by an expectation of, nor do they result in, gains from liquidating the assets of the target company.¹⁴ Nevertheless, an estimate of the resale prices of certain significant severable assets, such as land and buildings, is desirable information for report users.

With respect to creditors, it is from the funds generated from operations that they expect to be paid rather than the liquidation of property used in production or marketing. Major secured creditors are in a position to demand any information they seek and of commissioning independent current valuations. Disposal of operating property is normally a last resort measure from which unsecured creditors can expect to lose. Their repayment in most instances depends on the viability and continuity of operations.

Statement 7: A value-to-the-business approach to asset valuation has more relevance than RCDS mono-value approaches.

Comment: Critics have pointed out that some of the basic assumptions underlying the respective current value systems lack universal relevance. For example, the asset valuation method in the Edwards and Bell model presupposes that the superiority of the firm's existing production process over alternative production modes extends into future periods.¹⁵ This effectively assumes away technological change. On the other hand, Chambers' current cash equivalent system¹⁶ has been criticised on the grounds that asset exit values are not relevant information for reporting purposes for all firms or at all times. For these reasons some writers have advocated a value to the

business or value to the owner approach,¹⁷ an eclectic method of asset valuation. This approach and its limitations are explained below.

Following Bonbright, value to the owner is defined as the adverse value of the entire loss, direct and indirect, to the owner if he were deprived of the asset.¹⁸ The notion is similar to an opportunity cost concept, and its application provides a simple valuation rule for inventories. The inventory is valued at its replacement cost if replacement after sale is intended, and it is valued at its net realisable value if replacement is not intended. The valuation rule for fixed assets is more complex. Fixed assets intended for sale take on the nature of inventory and can be treated accordingly. A fixed asset in use is valued at the replacement cost where replacement at the end of its economic life is expected. Consider, however, a locked-in situation in which the net present value of the asset lies somewhere between its replacement cost (the upper bound) and its resale price (the lower bound). Its value to the owner is then given by its present value.

The difficulty with the VB or value to the owner concept lies in the treatment of this special case. The net present value of an asset is a function of the future cash flows associated with its use. These flows may be defined as incremental flows, as for example in a capital budgeting exercise, but this treatment is not consistent with asset valuation, as the synergistic benefits resulting from the joint use of the asset with the firm's other resources are all captured by the incremental flows. An alternative approach is to view the future flows as flows which are uniquely associated with the asset. Unfortunately this approach is non-operational; because of the interaction effect from the joint use of resources, an allocation of the total cash flows of the firm to individual resource inputs is perforce arbitrary and may not be exhaustive.

The case for CPPA and GIPPI

Since CPPA constitutes a restatement in a common measurement scale of the conventional financial statements, its utility and relevance are wholly a

¹³See, for instance, M. A. Weinberg, M. V. Blank, and A. L. Greystoke, *Weinberg on Take-overs and Mergers*, 3rd ed., Sweet and Maxwell, 1971, Ch. 3.

¹⁴H. Manne, 'Mergers and the Market for Corporate Control', *Journal of Political Economy*, 1965, pp. 110-21; R. A. Taussig and S. L. Hayes, 'Cash Take-overs and Accounting Valuations', *Accounting Review*, January, 1968; and G. D. Newbould, *Management and Merger Activity*, Guthrie, 1970.

¹⁵Edwards and Bell, op. cit., Ch. III.

¹⁶Chambers, op. cit. See also R. J. Chambers, 'Second Thoughts on Continuously Contemporary Accounting', *Abacus*, September, 1970.

¹⁷For example, see D. Solomons, 'Economic and Accounting Concepts of Cost and Value', in M. Backer (ed.), *Modern Accounting Theory*, Prentice-Hall, 1966; F. K. Wright, 'A Theory of Inventory Measurement', *Abacus*, December, 1965; and R. H. Parker and G. C. Harcourt, 'Introduction', in idem (eds.), *Readings in the Concept and Measurement of Income*, Cambridge University Press, 1969.

¹⁸For example, see Wright, *ibid.*

function of the utility and relevance of historical cost accounting in a period of stable price level.

The term 'historical cost accounting' is ambiguous and unsatisfactory, as it is largely identified with current generally accepted accounting practice. Because of the permissiveness governing current accounting practice, it is often asserted that historical cost accounting produces information that is uninterpretable. But assuming a stable general level of prices (i.e. there is no definite trend of inflation or deflation), it is feasible to provide an entirely logical interpretation of the system.

The term 'historical cost' is hardly adequate to describe the conventional accounting system. It could be better labelled an 'invested cost', 'invested funds' or 'fund accountability' system.

In this system costs of all resources committed to an entity are accounted for; that is, they are locked into a double entry framework with a record of the sources. All movements of resources therefore must be tracked. Internally generated resources provided by profit-directed activities are of particular interest. The profit and loss statement becomes a focal point in relating revenues and expired costs. In this framework a balance sheet is a static funds statement indicating the sources and disposition of funds at a point of time. Assets comprise cash, claims to cash and unexpired costs. The last group requires evaluation at the end of each accounting period to ensure the write-off of those resources that are not represented by service potential with a value at least commensurate with the funds invested therein. Apart from the underlying stewardship function, information is provided to assist in assessing the return on funds actually invested (as distinct from a return on the value of the assets employed).

Basically the system accounts for invested funds – their sources, investment and movement. The special emphasis on the resources generated by profit-directed activities obscured for a time the necessity for the balance sheet and profit and loss statement in the system to be accompanied by a statement of fund flows, so that all the important financing and investment activities of an entity occurring within a reporting period are shown as well as those relating to profit and end of period balances.

Certain commonly recurring objections to this system are examined below.

Objection 1: Changes in the value of the dollar are ignored.

Comment: This objection is valid and CPPA seeks to remedy this defect. At this stage it may be noted that certain current value advocates claim that general purchasing power is, in any case, irrelevant as it is the specific purchasing power of the entity

(and the investor) that is relevant.¹⁹ Also, it has been questioned whether it is necessary for financial statements to be adjusted by accountants for general price level changes as the stock market is accustomed to dealing with nominal rates of return and market participants can allow for inflation by applying a higher discount rate to expected money dividend streams and by other methods.²⁰ The major rationale for using a constant dollar measure is that recorded financial data reflecting diverse units of measurement should be expressed in a uniform scale of measurement for arithmetical operations to be carried out validly. Price-level adjustments are viewed as pure scale restatements.

Objection 2: The historical cost system produces information that is useless or, at least, provides data of little consequence for decision making.

Comment: The basis for this objection rests on the assumption that the major, if not exclusive, function of accounting is to provide information for decision making. Historical costs are sunk costs while current costs are required for decisions.

This objection will be shown to be an overstatement of the position. Below it will be established that historical costs do have some relevance to decisions and accounting has important functions beyond the supply of information for decision making. Further, the examination above casts doubt on whether aggregated statements of current values are as relevant for decisions as claimed.

Objection 3: The historical cost balance sheet fails to report the current value of individual assets.

Comment: This is true. The seriousness of the charge partly depends upon the importance of aggregates or sub-aggregates of individual current values. The relevance of these values can easily be over-estimated especially in the light of the severe measurement problems associated with their procurement.²¹ The going concern valuation of a business takes into account internal and external interrelationships and

¹⁹R. S. Gynther, 'Why Use General Purchasing Power?' *Accounting and Business Research*, Spring, 1974, and L. Revsine and J. J. Weygandt, 'Accounting for Inflation: The Controversy', *Journal of Accountancy*, October, 1974.

²⁰W. A. Alberts, 'A Defense of Orthodoxy in Financial Accounting', *Journal of Contemporary Business*, Spring, 1973, p. 14; P. Brown, 'Accounting for Changing Prices: A Comment', *Chartered Accountant in Australia*, December, 1971, p. 25 and R. Ball, 'Inflation – Its Causes and Effects', *Australian Accountant*, July, 1975, p. 332.

²¹See Y. Ijiri, *Theory of Accounting Measurement*, Studies in Accounting Research No. 10, American Accounting Association, 1975, Ch. 6; M. C. Miller, 'Goodwill – An Aggregation Issue', *Accounting Review*, April, 1973, pp. 280–91, and Thomas, op. cit., Ch. 7.

the arrangement of constituents in the firm's economic activities into a unified whole. Such a global value is quite separate and distinct from aggregations of the values of the parts of an enterprise. Consequently, considerably more information inputs than individual asset values are required to establish such an overall value.

On the basis of research in the United Kingdom it has been reported that inflation adjusted earnings figures have had little impact on share prices.²² But it is by no means certain that the market would respond more to accounts drawn up on current cost principles:

Such [fair] values, we hasten to add, would be values of the separable assets, not the market value of the enterprise as a whole. If financial analysts had correctly appraised expected earning power efficiently in the first place, the market value of the enterprise would be unlikely to change due to the determination of fair value of separable assets.²³

The real questions are:

- (a) Should the current values of all individual assets be required in some aggregated form each year or is it sufficient for estimates of the current value of the more significant severable assets to be given in supplementary schedules to the accounts?
- (b) Should the current values be incorporated into the income statement and balance sheet by over-throwing the existing revenue and expense recognition rules?

In regard to question (a) it is obvious that a selective rather than a comprehensive reporting of current values is more economical. Also such reporting would facilitate the disclosure of multiple values. More important than the disclosure of the current values of all assets is the provision of certain additional information in respect of the valuations of significant severable assets such as the various assumptions underlying the valuations, the thinness or otherwise of exchange markets, the identities and qualifications of valuers, the volatility of exchange prices over time, and a measure of the dispersion in value estimates at the time of reporting.²⁴

Question (b) raises a number of issues, which are explored in this and the preceding section.

Objection 4: The system is based on arbitrary allocation.

Comment: The most serious challenge to the usefulness of historical cost has been presented by Thomas. The allocations embodied in the system are arbitrary. After presenting an extensive proof, Thomas writes:

Excepting rare instances where productive processes do not interact, and very high levels of input aggregations, financial accounting's allocation assertions are ambiguous and incorrigible . . . we have the unedifying spectacle of practitioners devoting considerable time and money to an institutionally required mumbo-jumbo that they either know, or should know, to be nonsense.²⁵

Some readers may feel that Thomas' views are over-pessimistic. Certain relevant points are:

- (a) Some of the information output of the historical cost system does not depend on allocations. In particular, it is possible to produce funds statements using the existing system and avoid arbitrary allocations.
- (b) The widespread demand for an income figure in society as a measure of economic progress and performance makes it unlikely that accountants have the power to decide amongst themselves to cease production of income figures. It has been asserted that 'capitalism without income measurement is just as inconceivable as Olympic games without sports records'.²⁶ On the other hand, it would be beneficial for accountants to complement allocation-affected data by clearly differentiated allocation-free data²⁷ and to reduce the range of choice available in selecting accounting methods.
- (c) Current value systems using entry values such as replacement costs are plagued with allocation problems similar to the historical cost system. Some allocation problems are reduced (e.g. cost flow assumption with inventories) and others magnified (e.g. the 'depreciation gap' problem). In regard to avoiding allocation problems, exit value systems using realisable values have a distinct advantage. However 'both current-entry and current exit-value reports are prey to aggregation difficulties that mirror the allocation problem'.²⁸ The variety of alternatives open in specifying the exchange mode in buying and selling assets and

²²R. C. Morris, 'Evidence of the Impact of Inflation Accounting on Share Prices', *Accounting and Business Research*, Spring, 1975.

²³W. C. Norby and F. G. Stone, 'Objectives of Financial Accounting from the Viewpoint of the Financial Analyst', *Financial Analysts Journal*, July-August, 1972, p. 80 (parenthesis added).

²⁴For a discussion of the need for the disclosure of a dispersion measure see R. Ma, 'On Chambers' Second Thoughts', *Abacus*, December, 1974, pp. 127-8.

²⁵Thomas, op. cit., pp. 156-7.

²⁶Ijiri, op. cit., p. 34.

²⁷In this regard see the proposals of R. A. Rayman, 'An Extension of the System of Accounts: The Segregation of Funds and Value', *Journal of Accounting Research*, Spring, 1969. See also 'Is Conventional Accounting Obsolete?', *Accountancy*, June, 1970.

²⁸Thomas, op. cit., p. 112 and pp. 122-7.

in specifying the level of aggregation or grouping of assets for acquisition or sale is such that no one has yet demonstrated a conclusive defence for selecting but one alternative.

Objection 5: Historical cost accounting is too flexible with a diversity of accounting methods and a permissive set of generally accepted accounting principles.

Comment: We agree with this objection and make certain recommendations in a later part of this paper.

Objection 6: Historical cost is unsuitable and unfair as a base for use by prices justification tribunals and taxing authorities.

Comment: This would appear to be a major objection, since it provides the incentive for management to embrace an accounting system for external reporting that reflects specific price changes.

Price justification is a complex issue. It certainly is true that much more than historical cost information is required for a price justification tribunal to make its assessments. Nevertheless, a role for historical cost exists as a benchmark in relation to more subjective data or as a base to which an index number of investment costs or other purchasing power can be applied.

It is beyond the scope of this paper to analyse the tax situation in detail as it is a separate and distinct issue in reporting. However, because of the widespread feeling in industry and commerce that this is a key issue and reason for the dismissal of historical cost, the following points are made:

(a) The squeeze on the private sector is due to many factors including the influence of prices justification tribunals, government monetary policies, and depressed stock markets making new security issues difficult as well as tax policies. A different method of accounting may highlight certain problems more clearly but will not solve the underlying liquidity problem.

(b) If the government is determined to extract from corporate enterprise a certain quantum of taxes, changes in the basis of calculating taxes will only result in a redistribution of the tax burden. From this one would expect some realignment of the prices of consumer goods and services depending upon the discretion open to management in setting market prices. On the other hand, if tax relief is granted to corporations, the result may be higher personal and other taxation.

(c) An objection of substance to the existing system is that the corporate sector faces a form of progressive taxation in times of inflation analogous to the personal tax situation. Further, the burden falls unevenly depending upon the length of time from the incurrence of expenditure to allowance of

its deduction. This normally means the government receives an increasing volume of taxes without going through the procedure of justifying an increase in rates. As a result there may be less discipline in government spending.

Objection 7: Insufficient timely information is disclosed in the present system of reporting based on historical cost.

Comment: There are important disclosure gaps in company reporting that should be rectified. Some recommendations are made in the concluding section.

In defence of historical cost

A rigorous defence of historical cost accounting is given by Ijiri.²⁹ He views 'accounting [as] a system designed to facilitate the smooth functioning of *accountability* relationships among interested parties' (p. ix). The accountability relationship requires the accountant (i.e. management) to keep records and prepare reports for the benefit of the accountee (i.e. owners). These records and reports have two main functions: accountability and the measurement of the economic performance of the accountant. Accountability is regarded as the central objective of accounting.³⁰ The most important function in accountability is stewardship which requires a full accounting to the accountee of every transaction and its effect.³¹ It is also the basis for the information flow from the accountant to the accountee (p. 33). Ijiri argues that the historical cost system ensures that records which trace the cause and effect relationship of past transactions and the current state of affairs are kept, in the sense that a historical cost balance sheet cannot be obtained from taking an inventory of assets and liabilities. Because the detailed recording of all past economic activities of the entity in a causal increment-decrement recording network is a basic requirement of historical cost accounting, Ijiri believes that 'insofar as accountability remains the key function of accounting, it is inconceivable that historical cost will be replaced by another valuation method in the future . . .' (p. 87). Historical cost accounting fulfils this function better than the competing current value systems.

²⁹Ijiri, op. cit. References to pages of Ijiri's study are given in parentheses in our text.

³⁰The continuing importance of accountability is highlighted by recent disclosures of corporate malpractices in New South Wales. There are at present more than 90 persons facing prosecution over company affairs. See 'Maddison's company crime prosecution list', *Australian Financial Review*, 14 August, 1975, pp. 2, 3, 5 and 11.

³¹But the notion can be extended to include responsibility for future operating plans and financial commitments, and for the use of public goods. (p. 33).

A performance measure indicates the degree of achievement toward certain defined economic objectives. Performance measurement is always fraught with difficulty. It basically requires a dissection of events and results into those that are controllable and uncontrollable by the accountant. It is probable that nothing short of a skilful management audit by a third party is adequate for effective performance evaluation. An important factor in the accountability relationship is that the accountant is reporting on himself. The distinctive value of historical cost information in this context is its relative hardness. A hard measure is one which is rigid and resistant to bias when the measurer is motivated to manipulate the measure in one direction or the other (p. 36).³² Ijiri has developed a rigorous theory of accounting measurement which takes into account the competitive pressure to bias external reports by management and which highlights the necessity for hard information in the present institutional setting.³³ There is scope for bias with historical cost but it is less than that existing in alternative accounting systems. The requirement for the provision of hard information does not exclude, of course, the supplementary disclosure of soft data, where it is useful to do so. The provision of hard data which are less open to dispute is also important in accounting for social and organisational equity, that is, in resolving the conflicting group interests of management, owners, creditors, workers, consumers, government and society.

While it is not the function of external reports to provide information for the accountant's decision making, it is pertinent to ask whether historical cost figures are relevant for decision making in general, whether by the accountant or accountee. Ijiri gives three reasons why historical cost could be relevant to a decision. First, in evaluating and selecting current decision rules, the decision maker needs to analyse the relative success of different decision rules adopted in the past. Since the historical cost is a consequence of a past decision rule, the historical cost figure is relevant to that rule's evaluation, and hence to the evaluation and selection of current decision rules as well. Second, historical cost is often relevant to the decision maker with a satisficing objective (as opposed to a maximising one). Under uncertainty the achievement of a satisfactory rate of

return on invested cost becomes the relevant goal. Third, many decisions are taken under environmental and institutional constraints, e.g. those imposed by tax authorities, price justification tribunals, etc., and these bodies often demand the greatest possible hardness in the accounting measures under review, because the issue is basically one of resource transfers between conflicting interest groups in society.

It is clear that historical cost has undisputed relevance for judging stewardship and performance. Its relevance for decision making is more controversial, but the arguments have merit and cannot be brushed lightly aside. It is argued that historical cost, in sharpening our perceptions of past events and in assisting in evaluating more subjective data, is relevant in formulating and selecting current decision rules. Also it is often relevant to decision making under uncertainty, when the decision maker adopts a satisficing objective. Finally, various decisions are necessarily imposed in historical cost terms on a decision maker by his environment.

Current purchasing power accounting

The case for adopting CPPA in periods of changing price levels is documented in a voluminous literature.³⁴ Criticisms of CPPA centre around three issues: the significance of maintaining capital in terms of general purchasing power when the firm is concerned with the specific goods and services it employs and not with goods and services in general, the relevance of price level adjusted figures for decision makers, and the selection of the appropriate general price index. With respect to decision relevance, the severe limitations of deflated historical cost data in management decision-oriented situations have been pointed out by various writers. Its relevance for the consumption policy of owners and the profit retention policy of the firm is a function of the particular capital maintenance concept favoured by the reader, while its relevance for decision making *in general* depends on the validity of the arguments set forth by Ijiri in respect of historical costs. It is appropriate, however, to note that the supply of information for decision making is not a main objective of the system.

The appropriate index problem and the capital maintenance issue are discussed below.

³²Ijiri distinguishes clearly between the notions of objectivity (which is an index of the dispersion of measures obtained under neutral conditions) and hardness (which is an index of the dispersion of measures obtained under competitive conditions). Ijiri, *op. cit.*, pp. 36 *et seq.*

³³It is not intended to impeach the integrity of management in general. The motivation is *always* present.

³⁴See, for example, the Institute's Provisional Statement of Standard Accounting Practice No. 7; American Institute of Certified Public Accountants, *Reporting the Financial Effects of Price-Level Changes*, 1963; and W. T. Baxter, *Accounting Values and Inflation*, McGraw-Hill, 1975.

GIPPI

From a theoretical viewpoint the deflation of accounting data by means of a general price index is obligatory in periods of changing price levels. Accounting is concerned with measurement, and accounting processes need to be consistent with measurement rules, the most fundamental of which in this context is additivity. The necessary conditions for additivity are first, that the attributes³⁵ of objects under measurement are identical across objects and second, the measurement standard is uniform for all measurements. Current purchasing power accounting is an attempt to fulfil the second condition for additivity within the existing historical cost framework.³⁶ In inflationary times the dollar is a poor measurement standard and amounts expressed in dollar terms are not additive. In particular, income cannot be derived as the difference between net worths at two points of time, when the beginning and closing net worth figures are expressed in dollars of different purchasing power. A major problem facing the accountant is how to correct for the distortion in the financial statements in a period of inflation, and restore the additivity property in accounting measurement. This distortion arises from the statistical bias in his measures of past and current transactions, when the measurement standard employed does not have a stable dimension over time. Critics have charged that accounting for inflation will not result in reporting assets at their current values in the financial statements, but the reverse also holds. Current value accounting is not designed to meet the challenge of inflation, and cannot therefore be expected to do so.³⁷

Like all price indexes, a general price index is a sample average. It is computed by combining in a summary figure changes in the specific prices of the individual goods and services comprised in the sample. Critics have pointed out the alleged deficiencies of a general price index. In particular, the regimen of goods and services on which the index is based may lack generality; for example the consumers' price index is based on the expenditures of a

sample of middle income white collar workers and their families. Further, since specific prices do not move together the index is said to be unrepresentative of the individual price movements.

These criticisms appear to rest on a misconception. A general price index seeks to reflect changes in the general price level, and is not a mere statistical summary or average of the secondary price levels in the economy.³⁸ Conceptually, the notion of the general price level has economic significance; it is the reciprocal of the value of the dollar, that is the purchasing power of the dollar over goods and services in general. Ideally, changes in the purchasing power of the dollar are reflected by corresponding inverse changes in the price index.

There are certain essential features of a good index. Its construction should be undertaken by an independent and impartial body such as a government department, since the implementation of price level accounting could have implications for the distribution of the tax burden between different companies, the resolution of competing claims (of shareholders, creditors, workers, etc.) and the allocation of resources. The publication of the index should be timely; it is desirable that an index published monthly be employed. Firms would otherwise be restricted in their choice of the financial year. Further, an index published at frequent intervals enhances the use of averaging procedures in adjusting the accounts.

It is evident that an overriding feature of the index is that its movements should reflect closely changes in the value of the dollar. Moonitz has suggested that a broadly based index is desirable on this account. But much of the controversy over the choice of a general price index may not be very significant in practice since there is evidence of a close correlation in inflation rates revealed by different general price indexes. In many countries the adoption of the appropriate index, assuming the implementation of current purchasing power accounting in the immediate future, could be circumscribed by the availability of broadly based indexes that are neutral (in the sense that they are constructed by an official body) and are reported on a timely basis.

In giving consideration to alternative general price indexes, it is believed that movements in the various general price indexes are sufficiently correlated, such that the choice of the appropriate index is not a burning issue. But a *general investment purchasing power index*, as proposed by Hendriksen and

³⁵The term 'attribute' is in common usage in the accounting literature. In statistical theory an attribute is the presence or absence of a given characteristic. With respect to a phenomenon that can be measured, the appropriate term is 'variable', see J. Kmenta, *Elements of Econometrics*, Macmillan, 1971, p. 5.

³⁶Critics would question that historical cost is a relevant attribute, but this is a horse of a different colour as a relevance requirement is not a measurement rule.

³⁷It is altogether improper to refer to current value accounting as inflation accounting, an unjustifiable lapse that has afflicted even academic authors.

³⁸See J. A. Schumpeter, *Business Cycles*, McGraw-Hill, 1939, Vol. II, Ch. VIII.

Ma,³⁹ is favoured since it reflects changes in the purchasing power of the dollar and additionally its use is consistent with a special capital maintenance concept, i.e. maintaining the general investment purchasing power of the firm, as well as *the real capital endowment invested in commerce and industry*.

The use of GIPPI may be contrasted with that of a consumer price index or cost-of-living index which focuses on maintaining the firm's capital in terms of the purchasing power of shareholders' funds over consumption goods and services in general. The ~~interest~~ of investors' interest in consumption goods is conceded, but it is believed that the problem of preventing real capital erosion in the private sector has priority.

Another index that has often been advocated is the GNP (or GNE) implicit deflator.⁴⁰ Its supporters argue that on account of its broad base it is the most appropriate measure of changes in the value of the dollar. The above argument against the use of the consumer price index is pertinent here, but there is a more disturbing feature. The implicit deflator is not a price index in the strict sense, which requires the measurement of price changes over time relating to a fixed basket of commodities. The implicit deflator is a function of both price changes and expenditure patterns in the economy and for this reason the present writers do not consider it an appropriate measure to employ in deflating accounting data.

From the viewpoint of preventing the erosion of industrial capital by rising prices, the use of GIPPI has a certain affinity to the objective of current cost accounting. However, the associated capital maintenance concept is superior to those found in the current cost or current value accounting systems. So far as maintaining the physical plant or productive capacity of a particular individual firm is concerned, it is evident that deficiencies or over-provision might arise. But care should be taken not to confuse the accounting and the managerial functions. Management must employ current market prices in the formulation of a sound capital budget policy with respect to plant maintenance and the replacement and expansion of production facilities as well as the evaluation of alternative investment plans. The substantive question is whether in formulating measurement rules, priority should be given to the

maintenance of the productive capacity of the firm in terms of its specific assets. Providing for the retention of funds in this manner cannot be justified, since with changes in technology and consumers' tastes, assets are rarely replaced by their identical twins. It would be simpler and more defensible to maintain invested capital as general investment purchasing power potential. The *a priori* argument is supported by empirical evidence that suggests that those firms which give attention to strategic planning and are flexible and responsive to market demands are more economically successful.⁴¹ The mode of profit calculation should not emphasise or reinforce inappropriate static survival policies.

Gain on long-term debt and capital maintenance

The view that purchasing power gains and losses on all monetary assets and liabilities are part of net income is gaining increasing acceptance by writers on current purchasing power accounting. This has particular significance for highly geared firms, which are held to benefit in inflationary times from the diminished real burden of existing debt, should company income tax be based on the price level adjusted income figure.

The emphasis, from the viewpoints of both external reporting and taxation, on operating income after interest stems from a proprietorship concept of the business enterprise. From an entity viewpoint, which reflects more realistically modern business conditions, shareholders and long-term creditors are both suppliers of capital funds, on the assumption (which is a reasonable one) that long-term debts are recycled or otherwise replaced by equity funds. Thus a more appropriate measure of operational success (or failure) is provided by earnings before interest and tax. The present writers agree with Professor Jones: '... purchasing power gains and losses on net monetary assets have to be recognised to get a reasonable picture of operating results but ... changes in the purchasing power of senior securities represent shifts in the real equities of various classes of permanent investors and as such should not be allowed to affect the income account of the corporation itself'.⁴²

The approach is consistent with the stated capital maintenance objective. The real resources invested in the private sector encompass the total operating

³⁹E. S. Hendriksen, *Accounting Theory*, rev. ed., Irwin, 1970, pp. 225-6, and R. Ma, 'A Comprehensive Review of Some Price-Level Accounting Systems', *Abacus*, December, 1965, p. 130.

⁴⁰The GNP implicit deflator in period t is:

$$\frac{t \text{ period GNP at } t \text{ period prices}}{t \text{ period GNP at base period prices}}$$

⁴¹H. I. Ansoff (ed.), *Business Strategy*, Penguin, 1970, and K. Sheridan, *The Firm in Australia*, Nelson, 1974.

⁴²R. C. Jones, *Price-Level Changes and Financial Statements - Case Studies of Four Companies*, American Accounting Association, 1955, quoted in *Reporting the Financial Effects of Price-Level Changes*, op. cit., p. 150.

assets, (including net money assets) under control of the individual corporate units, and not only those operating assets financed by equity funds. There seems no convincing argument, given the social objective of maintaining (at least) the investment capacity in productive resources in the private sector, why the operating performance of a business entity in a period should be evaluated differently, and its tax liability determined, depending on its capitalisation structure.⁴³ Insofar as purchasing power gains arise on debt funds, a case can be made for taxing the beneficiaries to which the gains eventually accrue. Any scheme to tax shareholders on such gains would entail immense complications, but these considerations lie outside the scope of this paper.

Conclusion

There seems little doubt that many users of financial statements are trying to assess the overall value of the business. Indicators of this value may be given by different interpretations of the required financial information. But the interpretations are based on a set of assumptions which cannot be complete:

Importantly, descriptive premises are abstractions; they are simplified characterisations of salient environmental features deemed to be important by the modellers of a process. However, real problem situations usually possess multiple facets or dimensions. Thus, even though premises may be 'true' (i.e. accurate portrayals of selected facets of an environment), *a single set of premises will not exhaustively describe an environment.*

This means that even if premises are true and the deductive processes applied to them are consistent with logical rules, the resulting objectives may not be uniquely true even though they are logically valid. That is, some other equally valid premises that abstractly represent some other facets of the environment could have been selected, in which case another potentially different set of logically defensible objectives might result.⁴⁴

The task is too formidable for accountants. The role of accounting is perforce a more limited one. To determine this role we need to agree on the relevant questions to ask. Is the prime objective of accounting founded on the traditional accountability function, or the more radical function of providing information for decision making? A choice is necessary if competing systems fulfil these functions in

varying degrees. The demotion of the accountability function is not easily justified, for there is no clearly defined trade-off. The choice of objectives is not value-free, and Kuhn's wry comment that 'men who hold incommensurable viewpoints be thought of as members of different language communities and that their communication problems be analysed as problems of translation'⁴⁵ strikes uncomfortably close to home.

If an appeal is made to a cost-benefit criterion, it is relevant to examine the claim that periodical current value reports are useful for decision makers. We have shown that this claim, which is an article of faith for many accountants, has no reality for many of the decisions that management and investors make.

The current value systems have been examined and found wanting. Many of the benefits claimed for the periodical mandatory reporting of comprehensive current value data have an 'Alice in Wonderland' quality and evaporate on close scrutiny. The most important illusion has been in respect of the relevance of aggregates and allocations of current values for decision making.

Proposals for accounting reform, such as those embodied in the Sandilands report in the United Kingdom and the Mathews report in Australia, focus on the plight of industry and commerce after several years of acute inflation. The recovery of the private sector is dependent on direct and immediate tax relief for the large number of firms facing liquidation on account of rising factor costs, tax levies on historical cost based profits which have been effectively taxes on capital, and a stagnant economy. The case for a company tax based on current operating income, excluding holding gains on fixed assets and inventories, may be justified by the stark business realities. But this is a short-run situation. The current value proposals do not offer a viable long-term solution to the external reporting problem.

In evaluating the priorities for accounting reform on a cost-benefit basis, we recommend the implementation of a system of current purchasing power accounting. The retention of the basic historical cost form is justified on two main grounds: first, accountability is a prime function of accounting, and historical cost fulfils this function better than the competing current value systems and, second, the relative hardness of historical cost data lends a degree of credibility to the reported performance measure that is not achieved by the other approaches.

⁴³A corollary of this view is that no deductible loss arises on long-term loan investment.

⁴⁴'Report of the Committee on Concepts and Standards for External Financial Reports', *Accounting Review*, Supplement to Vol. XLX, 1975, p. 47. Emphasis in original text.

⁴⁵T. S. Kuhn, *The Structure of Scientific Revolutions*, International Encyclopedia of Unified Science, University of Chicago Press, 1970, p. 175.

There are serious weaknesses in the present historical cost system, and our recommendation for its retention as a base for CPPA reporting needs to be predicated on a rectification of its patent defects. Data hardness has significance only if the accounting processes are not subject to abuse, as hardness otherwise is not retained in the system output. It is proposed that a vigorous approach be adopted towards abolishing the present state of permissiveness in the development of rules governing accounting practice, and the strengthening of the authority and power of auditors for the exercise of true independence in achieving fair and substantive, rather than technical, presentation and disclosure.⁴⁶ To provide teeth to the new uniformity and an avenue for appeal against rule rigidity in hardship cases, an accounting court for appeal purposes is a concomitant recommendation.⁴⁷ In redesigning the system, it is advocated that attention be directed to disclosing pertinent new information on a timely basis. Significant reforms in the system include commitment accounting,⁴⁸ the disclosure of further operating data relevant to the assessment of return and risk, and more frequent interim reports. Significant supplementary disclosures include the publication of management's forecasts⁴⁹ and the current values of selected severable assets, such as land and buildings.

The reader may not agree with the above priorities for disclosure reform. He may have his own preferences. This is not the point at issue. It is stressed that

there is considerable scope for innovative reporting of data already available internally that has not hitherto been exploited. Such disclosures could possess as much or more information content as periodical current value reports.

The overriding concern of society today is with inflation, i.e. a continuing fall in the value of the dollar, the measurement standard employed by the accountant. The resultant distortion in accounting measurements is corrected, and can only be corrected, by a general price index adjustment. The operation of the system is consistent with measurement rules, of which the most fundamental for the accounting function is additivity. The restoration of the additivity property to accounting measurement is fundamental; this is a core requirement of any accounting reform. The benefits from CPPA are contained in the adjusted income statement. Criticisms of the price level adjusted balance sheet miss the point. The balance sheet is a summary statement of individual asset values, however computed, and its utility in all accounting systems is severely confined. The income statement in the CPPA system is simple to understand and has economic meaning for users: it presents information on the operational success or failure of the business enterprise based on completed transactions in the period and expressed in dollar units of common value. The disclosure by companies of their operating results adjusted for price level changes will highlight the deficiencies of the present company tax system, and in particular, the effective tax levy on the real invested capital.

The use of GIPPI results in a capital maintenance concept which is consistent with maintaining the capital of the firm in terms of its general investment purchasing power as well as maintaining the real capital resources invested in the private sector as a whole. Further, this concept provides a more equitable tax base inter-firm and does not inhibit structural change, compared with the operating capability maintenance concept in replacement cost dominated systems. The above benefits are enhanced when cost-benefit factors are taken into consideration, and it is believed that the accounting reforms advocated in this paper deserve careful examination by the profession.

⁴⁶For example, Sterling suggests two methods for increasing the power of auditors: (1) by law involving government intervention and (2) by professional organisation requiring the solidarity of auditors. R. S. Sterling, 'Accounting Power', *Journal of Accountancy*, January, 1973.

⁴⁷See L. Spacek, 'The Need for an Accounting Court', *Accounting Review*, July, 1958. A much wider role for an accounting court has also been proposed. See E. Stamp, 'The Public Accountant and the Public Interest', *Journal of Business Finance*, Spring, 1969.

⁴⁸Commitment accounting is an extension of double entry to the recognition of changes in resources for which a commitment has been entered even though it has not been fulfilled. Examples are leases, contracts for future deliveries, and construction contracts. Ijiri, op. cit., pp. 130-7.

⁴⁹See R. Ma and M. C. Miller, 'Forecasts and External Reporting', in *Disclosure of Forecasts*, Bulletin No. 16, Australian Society of Accountants, 1974.

A Closer Look at Sweeney's Stabilised Accounting Proposals

F. L. Clarke

Reviewing the first edition of Henry Whitcomb Sweeney's¹ *Stabilized Accounting* (1936) in *The Accounting Review*, Littleton (pp. 296-99) declared that:

... the book suffers from the relegation of much of the discussions of theory to magazine articles scattered over the past ten years ... But that does not help most of us. ... we probably have not, nor will we, read the dozen or so more supplementary articles by the author himself.

Those comments were somewhat prophetic, for it seems that Sweeney is one of the persons most often mentioned in the context of the price level problem in accounting, and one of those whose work has been read the least.

In a sense that is understandable, for although the reputation of Sweeney's book as a leader survives, his contributions to the literature on the price level problem are not contemporary. After the first edition of *Stabilized Accounting* appeared in 1936, he did not publish on the issue in the general literature again for nearly thirty years.

In the Foreword to the 1964 reprint Sweeney explained under the caption 'Forty Years After: or Stabilized Accounting Revisited' that during the 1920s his interest in the general problem of accounting valuation had been stimulated by Paton's 1920

Journal of Accountancy article on 'Depreciation, Appreciation and Productive Capacity' which illustrated how depreciation charges might be revised to show the changing purchasing power of money, his own awareness of the efforts made in post World War I Germany to construct balance sheets which stabilised the measuring unit and his reading of Mahlberg's solution to the problem in *Bilanztechnik und Bewertung bei schwankender Waehrung* (*Balance Sheet Presentation and Valuation During Inflation*), and his own general dissatisfaction with the valuation rules of traditional accounting (pp. xvii-xxi). For Sweeney, *Stabilized Accounting* was the final product of that interest; for others, it has been the object of misunderstanding.

In this article some aspects of Sweeney's explanation and illustration of stabilised accounting are subjected to a closer scrutiny than they appear to have been in the past, with the view to disposing of some misleading descriptions of his proposals.

Summary

The general conclusions drawn in this paper are:

- (a) Most current reference to Sweeney's proposals is drawn from *Stabilized Accounting*, but much of the substance of Sweeney's proposals there has been missed, ignored or not understood.
- (b) There is little evidence that descriptions and illustrations of stabilised accounting in the articles Littleton referred to have been read by those who mention Sweeney in their own work.
- (c) Grouping Sweeney and stabilised accounting with the various proposals for 'measuring the effect of inflation on firms' is misleading; the primary purpose of stabilised accounting was to achieve 'homogeneous measurement'.
- (d) Grouping Sweeney and stabilised accounting with proposals for price level adjusted accounting

¹Sweeney, Henry Whitcomb (1898-1967) was assistant professor of accounting in the School of Business Administration at the University of Pittsburg (1924-1925), professor of accounting at Georgetown University (1936-1944) and also professor of law at Georgetown Law School (1941-1958), and adjunct professor of accounting at Columbia Graduate School of Business (1956-1967). Between 1935 and 1943 he was also employed by the United States Government; first as Depreciation Expert in the Federal Communications Commission for a year, then in the Farm Credit Administration to 1939, and as Chief Accountant of the Navy Board of Contract Appeals, to 1943. In 1944 he entered practice as a CPA to concentrate on the legal and accounting aspects of contracting with Government agencies.

of the CPP variety is misleading: Sweeney preferred stabilisation on the basis of replacement cost or 'reproductive' cost.

(e) The mode of stabilisation on the basis of replacement or reproductive cost preferred by Sweeney did not overcome any of his objections to the features of ordinary accounting.

Reference to Sweeney

Although *Stabilized Accounting* (1936 and 1964) is the most often referred to description of Sweeney's proposals, it has only a corroborative use in the piecing together of the ideas that underlie them. In that context it is of little more use than his 1964 review of Accounting Research Study No. 6 'Reporting the Financial Effects of Price-Level Changes' (ARS 6),² as both merely provide evidence of his continued support for some of the views he had

expressed in journal articles between 1927 and 1935.

The 1936 edition of *Stabilized Accounting* was limited to 1,000 copies. It is likely, therefore, that most current reference to Sweeney's ideas has been through familiarity with the 1964 reprint. Sweeney, however, explained there in the Foreword that he had spun-off his main ideas in the earlier articles and that the manuscript of his thesis upon which they were based, '... had been cut to less than half and the style changed so that *Stabilized Accounting* would be '... a practical elementary treatise on economics and accounting' (p. xxii). It is surprising that so much reliance has been placed upon the book for a detailed description of stabilisation techniques and so little attention has been given to the articles. (The main articles and their cross referencing to *Stabilized Accounting* are set out in table (i). Later reference to those articles is designated by year of publication.) It seems reasonable to suggest that distorted descriptions of both stabilised accounting and what Sweeney was trying to achieve through it are products of misplaced emphasis on such a secondary source of reference.

²'Reporting the Financial Effects of Price-Level Changes' (Accounting and Research Division of the American Institute of Certified Public Accountants, October, 1963).

TABLE (i)
Sweeney's works referred to

Article	Reference to Articles in <i>Stabilized Accounting</i> (Holt, Rinehart and Winston, 1964 reprint)
'Effects of Inflation on German Accounting' <i>Journal of Accountancy</i> (March, 1927, pp. 180-191)	p. 8
'German Inflation Accounting' <i>Journal of Accountancy</i> (February, 1928, pp. 104-116) and letter to Editor of <i>Journal of Accountancy</i> in reply to J. H. Allen (April, 1928, pp. 310-311)	pp. 38, 40, 182
'Maintenance of Capital' <i>Accounting Review</i> (December, 1930, pp. 277-287) *	p. 6
'Stabilized Depreciation' <i>Accounting Review</i> (September, 1931, pp. 165-178)	p. 47
'Stabilized Appreciation' <i>Accounting Review</i> (June, 1932, pp. 115-121)	pp. 23, 50
'Capital' <i>Accounting Review</i> (September, 1933, pp. 185-199)	pp. 48, 53
'Income' <i>Accounting Review</i> (December, 1933, pp. 323-335)	pp. 19, 21
'Approximation of Appraisal Values by Index Numbers' <i>Harvard Business Review</i> (October, 1934, pp. 108-115)	pp. 18, 49
'How Inflation Affects Balance Sheets' <i>Accounting Review</i> (December, 1934, pp. 275-299)	pp. 8, 18, 49, 182
The Technique of Stabilized Accounting' <i>Accounting Review</i> (June, 1935 pp. 185-205)	pp. 18, 38, 75

*Reprinted in M. Moonitz and A. C. Littleton, *Significant Accounting Essays* (Prentice-Hall, 1965)

Generally, stabilised accounting is referred to in the accounting literature in the context of the various attempts to *account for the effects of inflation on particular firms*, and is described solely as an early exercise in adjusting financial data for changes in the general level of prices only. In this way it is implied that the prescriptions for such adjustments in *Statement of Standard Accounting Practice 7* in the United Kingdom³ and as set out in exposure drafts in the United States,⁴ Australia,⁵ Canada⁶ and New Zealand⁷ are properly in line with Sweeney's proposals.

Littleton and Zimmerman (p. 188), for example, explain that *Stabilized Accounting* was a 'pioneer work' and '... presented a comprehensive methodology for computing and disclosing the impact of inflation on accounting data'; Hendriksen (p. 59) referring to Sweeney's 'contribution to Theory' says that he recommended the adjustment of financial statements 'by the use of a *single* conversion purchasing power index' (emphasis added), and in his own price level study (p. 16) links Sweeney's work with that of Jones and Mason as if they necessarily represented the same ideas; Blough (p. 309) describes Sweeney's work in much the same terms as do Littleton and Zimmerman; Mathews and Grant (p. 23) mention Sweeney's proposals under the sub-head 'Alternative Methods of Accounting for Inflation' and explain that his approach involved conversion into current values of every item appearing in the profit and loss account and balance sheet by means of a general index of purchasing power; Paton and Littleton (p. 139) refer to stabilised accounting (though not to Sweeney by name) as a method of 'common dollar' accounting and explain that such a system is 'quite different' from replacement price accounting; Baxter on a number of occasions has given credit to Sweeney for the term 'stabilisation' as a description of a method by which 'it is possible to restate every figure in both the income account

and balance sheet with the help of price-index numbers' (1975, p. 30; and for example 1949, p. 456; 1959, p. 251), but gives no indication that Sweeney intended stabilised accounting to do much more. Baxter's extension of simple stabilisation to incorporate replacement prices (1959, p. 252; 1975, p. 74) is made as a supplementary procedure rather than as an integral part of stabilisation, as Sweeney devised it; Kirkman (p. 112) only mentions Sweeney in the context for proposals for making adjustments for changes in the general level of prices; Gynther (p. 2) notes Sweeney's 'now famous book' but, as explained below, missed half of its message; Wilk (p. 28) argues that 'conversions should be made with an index portraying changes in the value of the monetary unit and not indices for any particular assets... This is the system which was adopted by H. W. Sweeney in his book *Stabilized Accounting*'; The Association of Certified and Corporate Accountants (p. 58-9) implies that stabilised accounting ignores differential increases in prices and that it therefore 'attempts to exclude the monetary factor'; Causey (p. 26) describes Sweeney as promoting a straight price level adjusted system' in which a general index was the ideal deflator'. He refers for support to '... Sweeney's illustration for the A Corporation' in chapters I and II of *Stabilized Accounting* and ignores the comprehensive examples that follow in later chapters; Weston (p. 381), reviewing stabilisation procedures, notes Sweeney's contribution in *Stabilized Accounting* but identifies it only with adjustments through the use of a general index; and MacNeal (p. 116) in criticising stabilised accounting refers only to an example in which the general commodities index is used.

None of the above refers to any of Sweeney's work other than *Stabilized Accounting*.

Homogeneous unit

Contrary to the current linking of Sweeney with attempts to account for the effect of inflation, his primary aim with stabilised accounting was to correct conventional accounting so that profit and loss and balance sheet data would be stated in 'homogeneous terms'; that is, in terms of monetary units entailing equalised purchasing power.

The 1927 and 1928 articles introduced his concern over the mathematical impropriety of comparing, adding and subtracting heterogeneous money units. 'Such comparisons' he noted, 'violate the mathematical principle that dissimilar items cannot properly be compared with one another' (1927, p. 183; 1928, p. 104); and 'There is no advantage in finding the total of heterogeneous units. It would be meaningless' (1927, p. 189), and further that 'Costs and

³'Accounting for Changes in the Purchasing Power of Money' (The Institute of Chartered Accountants in England and Wales, *et al.*, May 1974).

⁴'Financial Reporting in Units of General Purchasing Power' (Financial Accounting Standards Board, 31 December, 1974).

⁵'A method of "Accounting for Changes in the Purchasing Power of Money"', (The Institute of Chartered Accountants in Australia and the Australian Society of Accountants, December 1974).

⁶'Accounting for Changes in the Purchasing Power of Money' (Accounting Research Committee, Canadian Institute of Chartered Accountants, July 1975).

⁷'Accounting for Changes in the Purchasing Power of Money' (Board of Research and Publications, The New Zealand Society of Accountants, March 1975).

expenses expressed in marks having particular purchasing power could not be deducted from income expressed in marks having a different purchasing power if true profit or loss was to be ascertained' (1928, p. 104).

Reference in the 1928 article to the impropriety of adding heterogeneous units was a subtle, though nevertheless definite, indication that the primary purpose of the stabilised accounting techniques was to achieve the homogeneity of units in accounts, even rather than contemporaneity. In an example there, numbers representing paper mark units were deflated to represent their purchasing power equivalent in pre-war gold marks, to stabilise amounts appearing in a 'factory building account'. If contemporaneity had been the major issue the 1914 gold marks should have been inflated to represent their equivalent purchasing power in terms of the contemporary 1923 paper marks.

Further reference to the primacy of achieving the homogeneity of units in accounts filtered through Sweeney's other articles appearing prior to *Stabilized Accounting*. For example:

... stabilized accounting is primarily concerned with homogeneously representing the money units of former dates in the general price level ... (1932, p. 115);

and referring to the consequences of inflation on accounting data he noted that, 'financial figures ... become non-uniform, dissimilar, heterogeneous in nature' (1934, p. 277). Demonstrating stabilisation he further explained:

... because valuation at cost of reproduction or replacement necessarily conduces toward a much more homogeneous measurement of all assets ... it cannot help being viewed with approbation by stabilized accounting, which is primarily concerned with homogeneous measurement (1935, p. 197).

The emphasis was retained in *Stabilized Accounting*. It might be argued that that is to be expected since Sweeney admitted the book was based on the same source as the articles. But the cutting and trimming of his thesis in the preparation of *Stabilized Accounting* gave him the opportunity to tone down that emphasis if he chose to. Clearly he did not.

Though it is only one of three major complaints that Sweeney levelled at conventional accounting, the objection that it is 'mathematically unsound' (p. 7) because '... the figures on the ordinary balance sheet and profit and loss account are all scrambled together' is reinforced at several places in the text and his primary aim of removing that defect is stated explicitly in a number of places; for example,

... stabilized accounting is *primarily* concerned

with the use of homogeneous measurement (p. 42) (emphasis added);

... stabilized accounting, although *primarily* interested in homogeneous measurement ... (p. 51) (emphasis added);

Stabilized means *uniformly* expressed in the value of the dollar as of the date represented by the balance sheet rather than ... a mixture of the dollar values of many different dates and periods (p. 159) (emphasis added).

Sweeney's declaration that stabilised accounting was primarily concerned with homogeneous measurement is understandable, for the homogeneity of the product of the profit or loss calculation and of the amounts set out in the balance sheet was a necessary condition for rectification of the other two defects he noted in *ordinary accounting*. It was also described as being (i) *irrelevant*, insofar as it did not show progress made by an entity in gaining greater command over goods and services in general, 'the customary main object of economic activity' (1930, p. 277, 287; 1933 'Capital', p. 193; 1935, p. 194; and *Stabilized Accounting*, p. 4, 17 and 189), and (ii) *incomplete* insofar as ordinary accounting did not show all the financial gains and losses of an entity in the period in which they arose (p. 15). Whilst homogeneity could be achieved independently (the deflation style of stabilisation in the 1927 article illustrated that), measuring changes in a firm's command over goods and services in general and the reporting of all its financial gains and losses necessitated that the profit or loss of each period and the data in the balance sheet be expressed in terms of contemporary (and therefore homogeneous) purchasing power. Removal of the objections that ordinary accounting was irrelevant and incomplete merely necessitated that stabilisation had to be in terms of current, rather than past, purchasing power.

Sweeney's criticism of ordinary accounting is just as valid in relation to deflationary conditions as it is in the context of inflation. The proper context of the criticism is 'price level fluctuations', of every kind. Homogeneous measurement is just as primary a matter and ordinary accounting could be equally as irrelevant and incomplete under deflationary, as under inflationary conditions. He in fact argues along those lines in *Stabilized Accounting* (p. 183) when defending his proposals in the context of the deflated US economy in the early 1930s. So, although directed at the problems of accounting under inflationary conditions, the stabilisation techniques were not intended to be linked uniquely to them.

We might expect that specific reference to 'inflationary gains and losses' would be a feature of the product of stabilisation if those techniques were

intended to 'account for' or to 'measure' the effect of inflation on particular entities. But no such label is given to any item in the works referenced in Table (i), nor is there any clue in those articles that doing so was ever contemplated by Sweeney. This is in direct contrast with descriptions such as 'inflation gains or losses' and 'Statement of income and inflation gains (loss)' in ARS 6 (p. 128). Sweeney's stabilisation method was merely intended by him to make the data in the stabilised profit and loss account and balance sheet homogeneous, so far as purchasing power was concerned, and to show whether the particular entity's command over goods and services in general (its purchasing power) had increased or decreased during the accounting period. Unlike price level adjustment proposals such as those in ARS 6, Sweeney's stabilisation was not a method for measuring the effects of inflation on specific entities and clearly was not intended to be.

Preference for 'replacement cost version'

Sweeney's hypothesis that the main object of economic activity was to gain greater command over goods and services in general predicated his argument that income could not be calculated unless a charge was made for the maintenance of 'real (purchasing power) capital' based on movements in a *general index* (1930, p. 182). But in the 1930 article he was less rigid than the previous rejection by him of basing depreciation on the replacement costs of assets, because doing so 'was directed towards the maintenance of real (physical) capital' (1927, p. 187). The use of 'specific' index numbers (representing replacement costs or costs of reproduction) was permitted 'if the intention is to increase economic power over one good' (p. 185) and

... under certain conditions measurement may, with more justification, be based on the price of a single commodity ... Although stabilized accounting customarily employs, with apparent justification, the general index ... it is not essentially related to any particular kind of measuring unit (p. 287).

The 1927 objection to depreciation based on replacement cost was reiterated in 1931 in 'Stabilized Depreciation'. However, like the 1930 article that preceded it, the line was softer than it had been. Replacement cost depreciation was acknowledged as a 'safer and more conservative plan of procedure to adopt during the inflation years than the old original cost based theory ...' (p. 173) and it possessed 'notable merit' (p. 174).

Three years after the 1929 Symposium on Apprecia-

tion⁸ had reached the conclusion that asset appreciation ought to be accounted for (though there was no consensus regarding how it ought to be reported) Sweeney illustrated how appreciation might be stabilised. *Stabilised appreciation* was 'limited to an increase in the purchasing power that a particular asset commanded over growth in the value of all goods in general' (1932, p. 115-6). The development of stabilised appreciation was significant so far as the future development of stabilised accounting was concerned; it settled the depreciation on replacement cost issue that had been raised in the 1927 and 1930 articles, and clearly Sweeney was approving of it as part of the method (p. 119); it firmed up the distinction between realised and unrealised gains and losses which he had been developing since the letter by Allen to his 1928 article; and it provided the basis for the later distinction between *general and specific changes in the value of money* (1935, p. 197).

Further support for stabilisation on the basis of replacement or reproductive cost appears in both of the 1933 articles. There, Sweeney argued that 'capital valuation' should be based on present-cost-of-production ('Capital', p. 190), that depreciation based on replacement cost was 'conservative' and implied that it therefore was desirable (p. 191), and explained that stabilised income was composed of two parts, '1. Current income, and 2. Gains or losses in the value of property owned' ('Income', p. 323).

The mechanism of using specific index numbers to approximate appraisal values was demonstrated by Sweeney in 1934 and accompanied by the explanation that reproduction costs and appraisal values are entitled to a higher place in asset valuation (p. 108) and further reiteration that depreciation based on replacement cost was conservative (p. 191).

Preference for stabilisation on the basis of reproductive cost estimated by using numbers drawn from a specific index was made explicit in the discussion accompanying the illustrations in 'The Technique of Stabilized Accounting' (1935). Reproductive cost stabilisation was shown there *for completeness* (pp. 182 and 192), and:

because valuation at cost of reproduction ... conduces towards a much more homogeneous measurement of all assets than does valuation at original cost it cannot help being received with approbation by stabilized accounting (p. 197).

Evidence of Sweeney's preference for that mode of stabilisation is equally explicit in *Stabilized Accounting*. There, he argued that stabilisation

... must be able to give effect to valuation at

⁸See *Accounting Review*, Vol. V, March 1930, pp. 1-59, for a review of the proceedings.

replacement cost, as well as to valuation at original cost. This it is easily able to do . . . In fact, stabilization based on cost of replacement will be found still more informative than stabilization based on original cost (p. 44),

and described it as showing the 'sound value' of assets (p. 49).

Further support for stabilising on the basis of replacement costs and its link with the homogeneity aim is stated explicitly in the comment referred to above, noting that,

. . . stabilized accounting, although primarily interested in homogeneous measurement, cannot refrain from giving more approval to replacement cost as a valuation base than to ordinary original cost (p. 51).

Stabilisation based on replacement costs was further meshed into the scheme of his proposals by linking it with the notion of 'capital valuation' developed in the September 1933 article, with the explanation that,

Valuation at cost of replacement seems capable of giving more useful information to all concerned than does valuation at original cost. Also it is thought to yield values that in the long run approximate more closely the values derived from the ideal method of determining value of capital . . . The ideal method makes value depend upon future income . . . For these reasons the replacement-cost version of stabilized accounting is the one to be preferred (p. 53).

In *Stabilized Accounting* the stabilisation of estimated replacement costs was illustrated in chapter II which was devoted entirely to 'that version' of the method. And the illustration in chapter VI relating to the factoring company (Mill Agents) was based on accounts in which the non-monetary assets were stated at current market prices (p. 129). Sweeney, however, mistakenly identified the stabilisation of Mill Agents' accounts as a further example based on replacement costs (p. 171). The description in chapter VI indicates that Mill Agents' inventories and securities were stated at their current selling prices, not their replacement costs.

Unawareness of Sweeney's preference for stabilisation based on replacement or reproductive costs is supported also by circumstantial evidence. Some authors who have referred to Sweeney in the context of price level accounting with general index based adjustments, have gone on to propose replacement price accounting in various forms themselves and the use of specific index numbers for approximating replacement prices, without any further reference to Sweeney. Mathews and Grant (pp. 20-1), Gynther (p. 56) and Weston (p. 385) from among those

mentioned above, for example, do so without any mention of Sweeney's affinity with such proposals. Gynther, for example, turns to Ladd and to Edwards and Bell for support when proposing the approximation of replacement prices with the aid of index numbers.

Sweeney's review of ARS 6 may have contributed to the belief that he supported adjusting accounts by using general index numbers only. There he stated: 'To review the Study's main concepts, therefore, places this reviewer in the anomalous position of practically reviewing his own work' (p. 1100), and 'The Study recapitulates well the entire field of stabilized accounting in the first 58 pages' (p. 1111). It invites the inference that a reading of ARS 6 is a substitute for reading *Stabilized Accounting*.

Chatfield, for example, drew attention to that statement by Sweeney and suggested that both ARS 6 and *Accounting Principles Board Opinion No. 3* (APB 3, 'Financial Statements Restated for General Price-level Changes') followed ' . . . the basic method described in stabilized accounting'. In a sense they do, but only in respect of the *mechanics* of using index numbers to adjust accounting data. ARS 6, however, argued that 'Replacement Cost is a Separate Problem' (p. 29) and that 'It is not the function of this report to debate the merits of original cost or replacement cost as possible principles of valuation . . . price-level adjustments of accounting data are not the same thing as the adoption of replacement costs, either in theory or in the nature of the results'. Yet, Sweeney regarded them as integral parts of the same exercise. It is curious that Chatfield did not regard using replacement prices as part of Sweeney's basic method. When reviewing the 'changing concepts of asset valuation' he acknowledged Sweeney's recommendation that replacement prices be used in the stabilisation process. Furthermore he argued that 'MacNeal was only trying to do on the conceptual level what Sweeney had done with the practical problem of asset valuation'.⁹

We might also note that Sweeney's review is critical of most of the Study for its deviations from even the simple form of stabilised accounting. General price level adjusted accounting does not contain provision for the incorporation of replacement price or the use of specific index numbers, does not distinguish between realised and unrealised gains and losses and does not distinguish between 'general' and 'special' money value gains and losses. Stabilised accounting as it was described by Sweeney does each of these things.

⁹Chatfield, M. *A History of Accounting Thought* (Dryden Press, 1974), pp. 241-2.

Some of the reviewers of *Stabilized Accounting* have been no more precise or thorough when describing Sweeney's ideas than those persons who mention his work casually. Littleton in his 1936 review picked up Sweeney's use of general index numbers, but did not mention either his desire for homogeneous measurement or his preference for stabilisation based on replacement prices. Though Littleton interpreted Sweeney as having *substituted purchasing power for prices* as the 'keynote of orthodox accounting', he apparently missed Sweeney's attempt to establish a relationship between replacement prices and purchasing power. *Stabilized Accounting* was reviewed informally by MacNeal in his *Truth in Accounting*.¹⁰ In many respects he did so more thoroughly than Littleton, for Sweeney's use of replacement prices was described as an integral part of the stabilising procedures. However, MacNeal did not draw attention to the homogeneity motive that underlay them. King and Corbin did little better in their reviews of the 1965 reprint.¹¹ King noted that Sweeney's major concern was homogeneity, but described his use of replacement prices in the illustration of stabilisation that appeared in chapter III as '... a digression ... more appropriately placed in the chapter devoted to sundry topics'.¹² Whilst Corbin expressed his regret that 'The recommendation to use replacement costs in the stabilisation process has been missed by many "rediscoverers" of Sweeney', he, like Littleton and MacNeal twenty-nine years before him, did not comment on the emphasis Sweeney placed on achieving homogeneity in the units in accounts.¹³

Irrelevant, mathematically unsound, incomplete

Despite Sweeney's preference for stabilised accounting based on replacement cost, it does not overcome any of his three objections to ordinary accounting. The balance sheet and profit and loss data in the example given in 'The Technique of Stabilized Accounting' are reproduced in Tables (ii) and (iii) respectively, to illustrate why it fails to do so.

The first objection, that ordinary accounting fails to show progress in gaining greater command over

goods and services, and the third, that it fails to show all purchasing power gains and losses as they occur, can be dealt with together.

The \$14,996 stated for total assets in the stabilised reproductive cost balance sheet for X Corporation will only represent the purchasing power (the command over goods and services in general) embodied in the total assets, *if* the amounts set out beside the assets represent either actual money or money's worth. For purchasing power is entailed only by the possession of money or its equivalent. Neither the \$8,000 set out against 'Merchandise inventory' nor the \$3,996 amount of 'Total fixed assets' represent either actual money amounts or money's worth. Each is an approximation of reproductive or replacement cost and (at best) indicates only how much money the company would have to pay to acquire or produce those assets, rather than the purchasing power entailed by the possession of them. 'Total net worth' of \$13,296, therefore, is not a representation of the money's worth of the net assets at that time, and therefore does not represent purchasing power at any time. Comparison with purchasing power positions at other times, therefore, is impossible. The first objection stands.

So does the third. The financial gains and losses to which the third objection relates are components of the measure of the change in the purchasing power commanded by the firm. If such a measure cannot be established to overcome the first objection, then the third objection must also remain.

Sweeney argued in *Stabilized Accounting* (p. 51) that indexed amounts representing current replacement prices are 'expressed in current dollars' and therefore 'are expressions of current general purchasing power'. He proposed that such amounts could properly be added to other expressions of current general purchasing power, such as cash balances and the like, to give a meaningful total. In a restricted sense the notion Sweeney referred to is correct, but the way he described it is not.

The product of multiplying a past amount of money by index numbers is not an amount of current dollars; rather, it is an expression of the number of current dollars needed to confer the equivalent purchasing power of that past amount. If the numbers are drawn from a *specific index*, then the expression is of *equivalent specific purchasing power*.

But the essence of Sweeney's objection to the mathematical impropriety of ordinary accounting was not the addition or subtraction of units representing past and current dollars during times of changing price levels, it was the impropriety of representing the product of those calculations as amounts of any specified kind of purchasing power. Since possession

¹⁰MacNeal, K. *Truth in Accounting*, (Scholars, reprinted 1970), pp. 115-26.

¹¹King, B. C. review of *Stabilized Accounting* in *Journal of Accountancy*, March 1967, pp. 87-8 and Corbin, D. A. review of *Stabilized Accounting* in *Accounting Review*, Vol. XL, October, 1965, pp. 935-6.

¹²Ibid, p. 87.

¹³Ibid, p. 936.

TABLE (ii)
Extract from 'The Technique of Stabilized Accounting', Accounting Review, June, 1935, (p. 195)
The X Corporation Stabilized and Unstabilized Balance Sheets as at the Close of the First Fiscal Period

Assets	Original cost		Reproductive cost	
	Unstabilized	Stabilized	Unstabilized	Stabilized
Current Assets				
Cash	\$2,500	\$2,500	\$2,500	\$2,500
Accounts receivable	500	500	500	500
Merchandise inventory	5,750	7,000	8,000	8,000
Total current assets	\$8,750	\$10,000	\$11,000	\$11,000
Fixed Assets:				
Equipment	\$2,400	\$3,000	\$3,200	\$3,200
Less—Reserve for depreciation	240	300	320	320
Net				
Land	\$2,160	\$2,700	\$2,880	\$2,880
	1,550	1,500	1,116	1,116
Total fixed assets	3,710	4,200	3,996	3,996
Total assets	\$12,460	\$14,200	\$14,996	\$14,996
Liabilities				
Current Liabilities:				
Accounts payable	\$1,700	\$1,700	\$1,700	\$1,700
Net Worth				
Capital Stock	\$10,000	\$15,000	\$10,000	\$15,000
Surplus or Deficit:				
Realized:				
Net income for the period	\$2,160	\$1,496	\$2,160	\$1,496
Less—Dividend paid	1,400	1,500	1,400	1,500
Balance	\$760	\$2,996	\$760	\$2,996
Unrealized:				
Net income for the period		496	2,536	1,292
Net surplus or deficit			3,296	1,704
Total net worth	\$10,760	\$12,500	\$13,296	\$13,296

TABLE (iii)
 Extract from 'The Technique of Stabilized Accounting', *Accounting Review*, June, 1935 (p. 196)
 The X Corporation: Stabilized and Unstabilized Profit and Loss Statements for the First Period

Realized Income	Original cost		Reproductive cost	
	Unstabilized	Stabilized	Unstabilized	Stabilized
Changes in the Special Value of Money:				
Merchandise:				
Net sales	\$14,200	\$15,000	\$14,200	\$15,000
Less—Cost of goods sold:				
Net Purchases	\$13,500	\$16,500	\$13,500	\$16,500
Deduct—Final merchandise inventory	5,750	7,000	5,750	7,000
Gross profit on sales	\$6,450	\$5,500	\$6,450	\$5,500
Less—Selling, administrative, and financial expenses:				
Salaries	\$2,700	\$3,000	\$2,700	\$3,000
General expenses	2,800	3,000	2,800	3,000
Depreciation	240	300	240	300
Net profit on operations	\$710	\$800	\$710	\$800
Fixed assets:				
Profit on sale of land	1,450	1,313	1,450	1,313
Net income from realized changes in the special value of money	\$2,160	\$513	\$2,160	\$513
Changes in the General Value of Money:				
Loss on cash				
Less—Profit on:				
Accounts receivable		\$3,469		\$3,469
Accounts payable		\$500		\$500
Total		\$1,460		\$1,460
Net loss on realized changes in the general value of money		\$2,009		\$2,009
Realized net income for the period	\$2,160	\$1,496	\$2,160	\$1,496

TABLE (iii)—(continued)

Unrealized Income

Changes in the Special Value of Money:

Merchandise		\$2,250		\$1,000
Fixed assets:				
Equipment (net)	\$720		\$180	
Less—Land	434	286	384	204
Net income from unrealized changes in the special value of money		\$2,536		\$796

Changes in the General Value of Money:

Profit on:

Cash	\$156		\$156	
Accounts payable	340		340	
Net income from unrealized changes in the general value of money				496
Unrealized net income for the period			\$2,536	\$1,292
Final net income for the period	\$2,160		\$4,696	\$204

of actual money or money's worth entails the power to purchase goods and services in general, it necessarily entails the power to purchase specific commodities such as those to which replacement price indices relate. It seems reasonable to accept a proposition that the part of the dimension of *actual* money representing power to purchase those specific goods, and the expression of equivalent specific purchasing power derived in the indexed calculation, are homogeneous. But the reverse, claimed by Sweeney, is not the case. For the choice of extracting the specific purchasing power dimension of actual money is possible only because it embodies the whole purchasing power dimension. The numbers derived using a specific index, however, embody only that part of the dimension related to the goods specified in each case.

Amounts set out in the X Corporation's 'stabilized reproductive cost' balance sheet for cash, \$2,500, and for receivables, \$500, may properly be added to the \$8,000 estimated reproductive cost of inventory and yield a valid and interpretable total of \$11,000. But note that it can only be related to the power to purchase inventory. The \$14,996 product of adding to that total the \$3,996 stated as the total worth of fixed assets, however, is uninterpretable. The \$2,880 and \$1,116, for equipment and land respectively, are not expressions of homogeneous purchasing power, of any kind. The different index number series used in their calculation related to the movements in the price of equipment and land respectively, but neither related to changes in the prices of *any* other goods. The numbers represent different purchasing power dimensions, are heterogeneous and the product of adding them is meaningless.

The consequences of the different purchasing power dimensions of the fixed asset amounts and of the inventory are carried into the calculations of the *Net deficit* of \$1,704 through the 'changes in the special value of money' entries (\$1,000 in respect to inventory and (\$204) in respect to fixed assets) in the stabilised reproductive cost profit and loss account. It does not express current purchasing power of any identifiable dimension, and renders the \$13,296 stated as 'Total net worth' uninterpretable in respect to its purchasing power significance.

None of Sweeney's objections to ordinary accounting were overcome in the replacement-reproductive cost version of stabilised accounting. Yet stabilisation on the basis of original cost (the mode least preferred by him) overcame in principle the heterogeneity objection and therefore satisfied his primary aim,

since each amount restated by using the general index numbers represented general purchasing power. The other objections of course remain unsatisfied.

Curiously, despite the frequent references to stabilised accounting in the literature its general failure to overcome Sweeney's objections has either not been detected by commentators on the method, or has not been admitted by them. In particular the mathematical impropriety of the reproductive cost version has gone completely unnoticed, even by those who indicated their understanding of it. Neither Corbin nor Chatfield made any comment on the issue, whilst MacNeal clearly was unaware of it in stating that stabilised accounting was

an exhaustive and mathematically impregnable system for displaying changes in purchasing power. Whether or not one approves the concept employed . . . he must admit that it completely achieves its purpose (p. 123).

Conclusion

A summary of the main conclusions appears at the beginning of this paper. Collectively they amount to a general proposition that Sweeney and his stabilised accounting method have been misrepresented in much of the literature on the price level problem in accounting.

Inflation over the past twenty-five years has created the conditions in which the efficacy of making indexed price level adjustments to conventional accounts has been re-examined. Understandably Sweeney's pioneering work has been resurrected. But generally the reporting and analysis of its results have been less than accurate.

The effects of the loose descriptions and analyses of Sweeney's proposals are difficult to identify. It is reasonable to suppose, however, that the pursuit of excellence in any discipline is impeded by an imperfect record of the development over time of its underlying ideas. In the context of accounting thought it is almost certain to be, for the mere survival of a line of thought appears sometimes to be substituted for logic as a test of its rigour. Long-standing ideas in accounting seem to take on a mantle of respectability, to which they often are not entitled.

It is interesting to ponder whether inaccurate descriptions and analyses of stabilised accounting and the continued support by some for the indexation of conventionally prepared accounts, is coincidence or consequence.

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The Multiple-Criteria Approach to Making Accounting Decisions^{*}

George J. Staubus

This is a paper about making accounting decisions, i.e. choosing from among alternative methods of accounting for economic events affecting an entity. Accounting theory appears to be developing in the direction of a framework of concepts and procedures that can be used in making accounting choices. Surely the most elegant general form of such frameworks is that based on information economics and often referred to as the information evaluation approach (Feltham, 1972; Demski, 1972; Demski and Feltham, 1976). Unfortunately, difficulties of implementation limit its application, especially at the social, or public policy, level. Not only are economists unable to construct a social utility function but the measurement of private value of information is also not feasible except in special cases. Consequently, those making accounting decisions appear to be turning to a variety of frameworks consisting of one or two cost categories and a set of surrogates for the value of information (normative criteria of useful data). This latter approach to making accounting decisions is the subject of this paper.

The most direct antecedents of the present work are those which have concentrated on criteria for the evaluation of information or for choosing an accounting method, such as *A Statement of Basic Accounting Theory* (1966), Ijiri and Jaedicke (1966), Snively (1967), McDonald (1967) and the American Accounting Association Committee on Concepts and Standards – Internal Planning and Control (1974). The development of the present author's framework can be traced from 1961 through 1967 and 1970 to Kenley and Staubus, 1972. Valuable contributions have also been made by authors concentrating on the measurement-of-cost-and-value approach, e.g. Feltham (1972) and Demski (1972). The main

objective of the present work is to consolidate these and other statements and to develop more fully the multiple-criteria approach to making accounting decisions.

The bulk of the paper consists of descriptions of the nine criteria that are proposed for use in evaluating accounting proposals: attribute relevance, reliability, comparability, effects via other parties, understandability and readability, timeliness, optimal quantity, cost of producing and cost of utilising. A new and more specific definition of relevance is proposed. The sources of unreliability are classified and a new measure of verifiability is suggested. The criterion 'effects via other parties' is introduced and its multifarious ramifications explored and exemplified. Hypothesised relationships between the frequency and lag measures of timeliness and the value of reported data are graphed and the interdependencies among the concepts of optimal quantity, materiality, disclosure, costs of producing financial data and costs of utilising data are discussed briefly.

Following the descriptions of the proposed criteria, the applicability of the approach is illustrated by suggesting, for each criterion, some accounting decisions for which that criterion is likely to play a major role in detecting differences between the alternative accounting proposals. Some suggestions regarding the development of decision-making techniques, or accounting decision models, are given in the final section.

Criteria for the evaluation of accounting methods

The interpretation of the proposed criteria may be easier if the reader agrees with two points which have been taken into consideration in their selection. One is that, in each case, a criterion may be partially met, or met to a degree. Attribute relevance, for example, is not a go, no-go criterion; there are degrees of relevance. Rarely will a criterion be met

^{*}A paper presented in a plenary session of the Southwest Regional Meeting of the American Accounting Association at San Antonio, Texas, March 18, 1976 and adapted from chapter III of the author's book, *Making Accounting Decisions* (Scholars Book Co., forthcoming).

perfectly but complete failure on a criterion is also uncommon. As a consequence, tradeoffs must be made, as when a bit of relevance may be sacrificed for the sake of greater reliability, or lower cost of production. But, on the other hand, none of the seven benefit criteria can be completely absent; any accounting method which scores zero on any one criterion would be unacceptable. A minimum passing mark on each of the criteria is a necessary, but not a sufficient, condition for the acceptance of an accounting proposal. That is, in each case it is possible to imagine an appraisal on one criterion which would be so poor that it could not be offset by high ratings on other criteria.

Attribute Relevance

The first criterion of useful (valuable) accounting data is relevance of the attribute (of an object or event) being measured to the decisions of the user. An attribute (e.g. cost or market value) of an object or event is relevant to a decision if knowledge of its amount would help the decision-maker evaluate an outcome of one or more of the alternative courses of action under consideration. To make a decision is to choose, and a choice requires alternatives. The person using accounting data to choose among alternatives is trying to evaluate the consequences (outcomes, payoffs) associated with each alternative. The outcomes can only be in the future so prediction is required. Relevance does not guarantee that the particular datum (number) provided will be useful – its failure to meet one or more of the other criteria could make it useless – but only that the number pertain to an attribute in which the decision-maker is interested. An alternative view is that a relevant attribute is one called for by a decision model but we are not concerned with whether the decision process has been ‘modelled’ or not. We must remember that a model is an abstract representation of something; we are more concerned with the actual decision process, whether it has or can be modelled effectively or not. Please note that we are using the word ‘relevant’ in a specific way here. In a more general sense, everything we do in accounting should be relevant to accounting objectives. But we are limiting the relevance criterion to the relationship between an attribute being measured and a user’s decision process. The emphasis this definition places on the necessity for accounting decision-makers becoming acquainted with the decision processes of users is as obvious as it is unavoidable if accountants do not wish to depend upon serendipity to make their products useful in decision-making.¹

The present usage of the term makes attribute relevance a large, but clearly bounded, subject; dropping it at this point would be inexcusable were not the space limitation so critical. We suggest, however, that the financial community’s interest in predicting returns, which depend upon the entity’s future capacity to pay and its cash flows, permits us to identify cash-flow-oriented decisions as the primary class of decisions for which people use entity financial statements. Within this context, economic analysis enables us to rank (on the attribute relevance criterion) the several attributes of assets and liabilities which we associate with the several measurement methods (Staubus, 1961, 1971, 1973). Other criteria must, of course, be considered in the selection of a measurement method for application in a specific case.

Reliability

Users of financial data prefer that it have a high degree of reliability. Reliability is that quality which permits users of a datum confidently to depend on it as an accurate representation of the specific phenomenon it purports to represent. But reliable information is not necessarily useful. A 1935 timetable may give reliable information about the time the first train of the day stopped at the local station in 1935, but that information may not be relevant to a commuter’s decision as to when to leave his home on a 1975 morning. Or we may have reliable information about the price paid by another party for an asset in which we have no interest, or about some irrelevant attribute (or feature or property) of one of our assets. There is close ‘correspondence’ between such information and ‘reality.’ For example, if an asset is allegedly valued at historical cost, the amount shown is reliable if it truly represents the sum of the sacrifices made to acquire it. We do not consider such a valuation unreliable just because it does not represent the current market value of the asset. If market value is the attribute of which the decision-maker needs a measurement, historical cost is irrelevant to the decision at hand but it is not necessarily unreliable. An acceptable level of reliability is a necessary, but not a sufficient, condition for valuable information.

Reliability has so many facets that a review of the underlying sources and causes of unreliability may be helpful. The fundamental reason why financial statements often have unreliable components is that accountants make many choices, estimates and judgments in applying the various measurement and classification rules they choose to employ. The following categories come to mind; there may be others:

1. Predictions. These include lives, salvage values and service patterns of amortisable assets of all

¹For definitions of relevance which do not agree with the above, see Feltham (1972, p. 84) and Sterling (1972, p. 199).

kinds; failure of a debtor or other contracting party; worthlessness of assets. Different accountants will use different prediction techniques, involving different predictors and coefficients.

2. Allocations, i.e. splitting a sum into parts with the aid of a base that is not perfectly suited to the task. Examples are distribution of a cost among functional divisions, assignment of overhead to products, costing of joint products, amortisation of long-lived assets. Accountants make choices in connection with the selection of a base, accumulation of base data and calculations.

3. Predetermined overhead rates, standard costs, etc. The choice of using or not using such methods and the manner of their use, especially the disposition of variances, can make a considerable difference.

4. Selection of evidence in other cases. For example, when current market prices are being used there may be a choice of bid, asked, average or last sale; choice of market, source of the quotation, and so forth.

This listing, while not complete, should be sufficient to remind us of the multitude of opportunities for variation in the application of GAAP or any similar set of principles and rules. The results actually reported by the accountant in such cases will be influenced by a variety of circumstances such as the following:

1. Bias, e.g. conservatism; lack of objectivity, lack of independence on the part of the accountant or other party involved in these estimates and choices.
2. Habit, consistent use of established practices and rule-of-thumb approaches. These factors may either contribute to or detract from the reliability of the results.
3. Uncertainty, and the substitution of point estimates for probability distributions of future outcomes.
4. Errors in data supplied to the accountant which are used as predictors, price quotations, base data for allocations.
5. Weak association between predictors and attribute to be predicted; between basis of allocation and cost being allocated.
6. Prediction techniques; constants, variables and coefficients used.

Any user of accounting data who is thoroughly familiar with these many possible sources of unreliability will take them into consideration and avoid placing heavy reliance on any measurement made in circumstances which he believes to be conducive to bias or errors in predictors or requiring a choice from a wide range of possible outcomes, etc. The less knowledgeable user has a serious problem –

unless accountants give some clues (in their reports) as to the degree of reliability which should be attached to various financial statement items.

Now let us look at several parts of reliability which accountants have recognised. Verifiability and freedom from bias are two of the four accounting standards discussed in *A Statement of Basic Accounting Theory*. Verifiability and neutrality are identified as qualitative objectives in APB Statement No. 4. Ijiri and Jaedicke (1966) expressed reliability, objectivity and bias in mathematical terms while McKeown's (1971) measure of accuracy encompassed verifiability and bias. What do these various terms mean and how do they relate to reliability?

Verifiability. 'Verifiable financial accounting information provides results that would be substantially duplicated by independent measurers using the same measurement methods.' (APB, 1970, p. 37.) McKeown measures verifiability as:

$$v^{-2} = \frac{1}{n} \sum_{i=1}^n (x_i - \bar{x})^2 \quad \text{or}$$

$$v = \sqrt{\frac{n}{\sum_{i=1}^n (x_i - \bar{x})^2}} = \frac{1}{\sigma}$$

where σ is the standard deviation of x . x_i is the number arrived at by the i th measurer. It is assumed that n different measurers are measuring the same object by the same method but that they end up with different numbers. The distribution of the various measurements about their mean ($\bar{x}$) is described as *dispersion*. But note that it is not normally known in a practical setting because we normally do not have a sample of measurements of the same thing. Dispersion does not exist for one observation. However, experienced accountants working with a familiar problem, such as estimating uncollectible receivables for a department store, may be able to judge the dispersion that would result if a sample of accountants were to estimate those uncollectibles. Thus, experience is a basis for judging the verifiability of a measurement made by a relatively 'soft' method if the circumstances are known. Experimentation is another possible basis for judging verifiability, or dispersion. Variations in personal bias on the part of several individual measurers can contribute to dispersion as can any of the other variations in the circumstances of measurement as listed above in this subsection. Finally, we must remember that a highly verifiable measurement is not necessarily 'correct'. All it means is that other measurers would see it the same way; they may all be in error.

One difficulty with the McKeown measure of verifiability is that it is not expressed in a form that permits comparison of the verifiability of a set of measurements of a high-value object and a set of measurements of a low-value object. For example, if the standard deviation of several measurements of an asset is \$20,000 and the mean of the measurements is \$1,000,000, the verifiability (per McKeown) of the set of measurements is $1/20,000$, a very low figure. If, in another case, the mean is \$100 and the standard deviation is \$40, the verifiability, $1/40$, is much higher. It appears that it would be helpful to express these measurements in a comparable manner.

Adapting a suggestion made by Abdel-Khalik (1971, pp. 468-469),² we propose that the comple-

ment of the coefficient of variation, that is $1 - \left(\frac{\sigma_x}{\bar{x}}\right)$,

be used as a standard measure of verifiability. On this basis, the verifiability of the measurements of the valuable asset mentioned above is $1 - (20,000/1,000,000) = .98$, while the verifiability of the measurements of the low-value asset is $1 - (40/100) = .60$; the former has the higher degree of verifiability. If $\sigma_x > \bar{x}$, verifiability is negative – not an intuitively obvious interpretation but perhaps an acceptable one.

Bias. Freedom from bias, objectivity, neutrality and independence are terms used for a state of mind that permits an observer to perceive phenomena and record his perceptions without influence from his personal stake in the phenomena in question or the uses to which his record of those phenomena may be put. An objective observer 'calls them as he sees them' and he sees them as they are without consideration of who may be benefited or harmed as a result. Bias can only occur when choices are made so it is found in association with the judgments listed above in this subsection. Here we are concentrating on personal bias. The term 'bias' is also used in the literature to mean systematic bias which is inherent in a measurement method and can be estimated and removed by a correction technique.

Accuracy. McKeown defines accuracy as follows:

$$A^{-2} = \frac{1}{n} \sum_{i=1}^n (x_i - T)^2 \quad \text{or}$$

$$A = \sqrt{\frac{n}{\sum_{i=1}^n (x_i - T)^2}}$$

where x_i is a set of n measurements of the same thing and T is the true measure. This makes accuracy a combination of verifiability and any difference between the mean of the sample of measurements and the true value. This latter difference is sometimes called bias. Thus, according to McKeown, $A^{-2} = V^{-2} + (\bar{x} - T)^2 = V^{-2} + B^2$ where B is bias. Accuracy, in this meaning, is only applicable to predictions – which permit a subsequent determination of T . The only reasonable meaning of T for a past event is $\bar{x}$, unless we are willing to say that one observer (e.g. the one who is most qualified or who is working under the most favourable conditions; see McDonald, 1967) has the truth while others do not. Consensus of qualified observers (lack of dispersion) is the final word on observations but not on predictions; for the latter, outcomes can be observed and accepted as truth for comparison with individual predictions or the mean of a sample of predictions – providing there is no dispersion among several observations of the outcome.

Comparability

In accounting, comparability has to do with relationships between accounting practices which contribute to the process of relating two or more financial data. Its importance depends heavily upon the almost universal need to compare data when using them; an isolated datum is rarely of much use. The information value of the data is enhanced by the application of similar accounting practices to similar events (but not, of course, by treating significantly different events as if they were similar). An accounting method rates low on the comparability criterion if it permits identical objects or events to be reported as if they were different or different things to be reported as if they were identical.

Six types of comparability have been discussed in another publication (Kenley and Staibus, 1972, p. 55): interperiod, intercompany, interline and intraline comparability; comparability of lengths of reporting periods and *ex ante-ex post* comparability. Careful examination of these types of comparability may reveal that there is a good deal of overlap between them and the relevance and reliability criteria.

²Unlike the Ijiri-Jaedicke model, it appears that the complement of the coefficient of variation would be a better measure of reliability than the variance. This preference, on my part, is due to several reasons. For one thing, the coefficient of variation (and its complement, of course) is independent of the magnitude of the asset's or the transaction's value. Secondly, the complement of the coefficient of variation is more consistent with the intuitive assessment since the higher the complement of the coefficient or variation, the higher the reliability. This is not true of the Ijiri-Jaedicke (1966) measure although it is true of McKeown's.

Indeed, we could omit comparability as a separate criterion of valuable information and divide it between relevance and reliability. But this would dilute a concept which appears to deserve a lot of weight in the evaluation of accounting proposals; we prefer to apply it as an independent criterion.

Effects via Other Parties

Any person who is choosing among alternative accounting methods should take into consideration the effects the methods may have on his interests through the actions of other parties. A dramatic example was the 1971 controversy in the USA over the choice of the liberal 'flow through' method or the conservative 'deferral' method of accounting for the 'investment credit' permitted by the US Internal Revenue Code. The Accounting Principles Board apparently believed that the deferral method yielded data which were the more relevant to the decisions of investors but this view did not prevail. The US Treasury Department, which was interested in the investment credit's effects on the US economy, *via the decisions of businessmen*, argued for the liberal flow-through method. Corporate managers, who were interested in the effects the chosen method would have on themselves and their corporations *via the investment decisions and management appraisals of investors*, also preferred the flow-through method. Investors, as usual, exerted little influence but they, too, may well have been influenced by the prospective effects that the deferral method would have on the price of their securities *via the market actions of other investors*. It seems likely that effects via other parties was the key criterion in the ultimate decision, made by the US Congress (and President), not to prohibit any method. Most corporations have chosen the flow-through method.

Many other examples could be given of accounting decisions in which effects on an interested party via other parties could be a significant consideration. Several general categories of such cases are tabulated in Exhibit I. In addition to these widely recognised cases of 'ricochet effects', there is also the possibility of what might be called the 'two-cushion bank shot'. Consider the issue of whether uninsured fire and casualty losses should be reported as losses on the income statement in the period in which they occur or, alternatively, 'self-insurance reserves' should be established by regular periodic charges to expense in amounts similar to the insurance premiums which would have been paid if the risks had been insured against and actual losses charged to the reserve instead of against income. If (a) investors are believed to be averse to instability in reported earnings then (b) managers may be reluctant to report losses as they

occur (unevenly) so may incur the cost of uneconomical insurance if self-insurance reserves are not permitted. As a result, (c), investors may prefer that the FASB permit self-insurance reserves in order to encourage managers to economise on insurance costs.

Understandability and Readability

This criterion (or set of criteria) focuses attention on the receiving phase of the communication process. Effectiveness and efficiency of communication are desirable attributes of financial reports. The strengths and limitations of the readers of financial statements must not be overlooked by any accountant who is seriously interested in communicating with users. If data are equated with facts, and if information depends upon someone being informed, then data are converted to information by the communication process. Different sets of financial statements may be needed to reach different classes of readers, each class of which may have different vocabularies and backgrounds in accounting and finance.

Timeliness

There are two types of timeliness. One is *frequency* of reporting, i.e. the length of the reporting period. Should it be a month, quarter, half-year or year? It is possible to report too frequently or too infrequently. If the period is too short, a report on operations may be too heavily influenced by random or seasonal variations in the firm's activities, with the result that the data are misleading or at least not worth the user's time. But if the reporting period is too long, the user is required to wait too long before obtaining and using the information included in the reports. This delay is related to the other type of timeliness – *lag* between the end of the reporting period and the date the financial statements are issued. The value of information is always related to the lag, or delay, in reporting because it is always used for prediction.³

Exhibit II illustrates the relationships between the net value of information and frequency and lag. The zero point on the time axis represents infinitely short reporting periods or immediate reporting after the end of the period. The negative segment of the frequency curve indicates costs of producing and utilising data in excess of the benefits. The shape of the lag curve in the negative lag range indicates that predictions are more valuable than *ex post* reporting, other things (including reliability) being equal.

Optimal Quantity

Several concepts that relate to the quantity of data supplied to users have been discussed in the literature.

³Gregory and Van Horne (1960, p. 349) emphasised *interval* and *delay* instead of frequency and lag.

EXHIBIT I

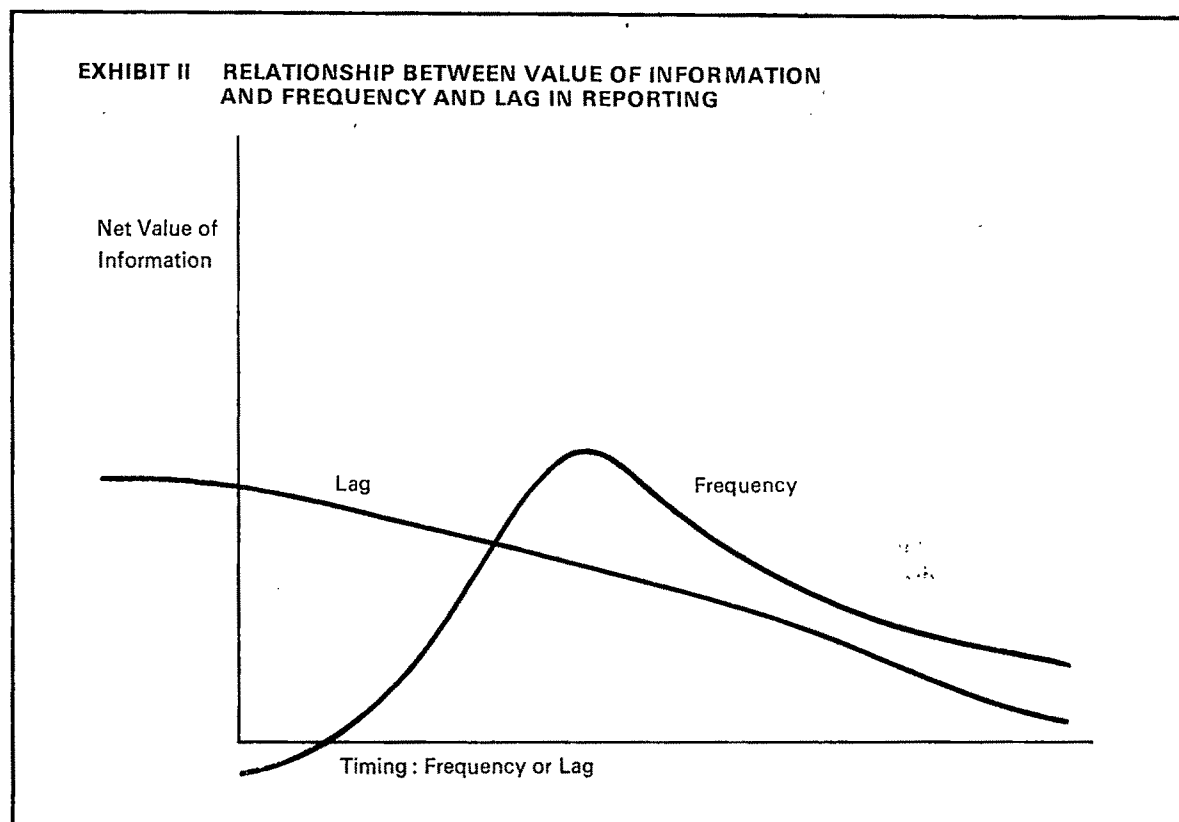
Examples of accounting decision situations in which effects upon an interested party via other parties may be significant

<i>Interested Party</i>	<i>Accounting Choice</i>	<i>Other Party</i>	<i>Potential Effect</i>	<i>Probable Choice</i>
Taxing authority	Treatment of tax incentives in accounting to investors	Managers of reporting entity	Effect on internal investment decisions	Flow through
Shareholders	Treatment of tax incentives in accounting to investors	Managers of reporting entity	Effect on internal investment decisions	Deferral
Managers	Treatment of tax incentives in accounting to investors	Shareholders	Effect on appraisals of managerial performance and on share investment decisions	Flow through
Shareholders	Asset and liability measurement methods (and 'instant earnings' and 'instant losses')	Managers	Decision to sell or hold an asset; decision to retire debt prematurely or not	Current value methods
Managers	Asset and liability measurement methods (and 'instant earnings' and 'instant losses')	Shareholders	Appraisals of managerial performance; share investment decisions	Historical cost
Shareholders	Capitalising or expensing research, development, exploration and 'human asset' costs	Managers	Expenditure decisions	Capitalisation of successful investments
Shareholders and managers	Choices affecting debt/equity ratio, working capital, stability and level of earnings	Lenders	Extension of credit and terms	'Liberal' methods
Shareholders and managers	Inventory cost flow assumption	US Internal Revenue Service	Tax liability of entity	LIFO
Top managers and owners	Any choice of method of reporting results vs. plans	Any subordinate manager	Decisions by subordinates not in interests of owners	Methods providing congruence
Managers and shareholders	Any choice affecting reported earnings	Union representatives	Bargaining on labour contract	Conservative methods

The APB (1970, p. 38) included completeness as a qualitative objective: 'Complete financial accounting information includes all financial accounting data that reasonably fulfil the requirements of the other qualitative objectives.' Disclosure is given a great deal of emphasis in the traditional literature of accounting and in recent efforts of the SEC. For example, Moonitz (1961, p. 50) postulated that 'Accounting reports should disclose that which is necessary to make them not misleading'. Materiality has perplexed practitioners for decades. Significance and sufficiency have also been advanced as criteria for the evaluation of information (Snavey, 1967). The literature of information economics stresses optimal partitioning and optimal aggregation, where partition-

ing refers to the fineness or coarseness of the classification scheme employed and aggregation involves merging separate events for reporting. The dangers of 'information overload' have also been recognised. Obviously all of these concepts are related to the quantity of data reported.

The issue is just how far to go in providing detailed data which appear to be borderline with respect to value in excess of cost of producing and utilising. Three segments of the issue come to mind. One is the extent to which such general categories as assets, liabilities, revenues and expenses, which are included in the accounts of the double-entry system, are broken down, or condensed, for presentation to users. Or, starting with the original events which the



accountant records, the question is 'how much aggregation of events is appropriate prior to reporting them?' The second segment is the extent to which additional descriptive material, including captions, parenthetical comments and accompanying notes, are included in the financial reports. Finally, circumstances not included in the double entry system may be included in financial reports; examples are contingent liabilities and valuable attributes of the entity which do not meet the criteria for inclusion as an asset. While the term 'optimal quantity' of data is not ideal, it does appear to cover this related group of concerns satisfactorily, although the necessity for cost-benefit comparisons may cause some readers to prefer the merger of this criterion with the cost of utilisation and cost of production criteria.

Cost of Producing Accounting Data

The costs of performing accounting activities (salaries, depreciation or equipment rental, supplies, audit fees, etc.) are often neglected by people who emphasise maximisation of the value of information to users. But accounting costs are not negligible. American Telephone and Telegraph (1975), for example, showed accounting expenses of \$786,802,000 on its 1975 income statement, an amount equal to 2.7 percent of its revenues. And the

entire revenues of the auditing branch of the accounting profession – perhaps two to three billion dollars annually in the USA – are accounting costs. One reason why the information evaluation approach to external financial reporting decisions has not been popular is that the parties who have the best feel for the costs (managers and owner-managers of firms) are not the same as the parties who enjoy the benefits (absentee investors, government agencies, and, in a sense, auditors), and most of the decisions have been made by the former. Such circumstances make cost-benefit efficient decisions very difficult. As an analogy, consider how a society made up of 100 university students and 100 childless adult taxpayers – don't ask what happened to the students' parents – might decide on how much money to spend on university education and what portion should be paid by the students in fees. The usual solution is to select policy makers (elected officials or members of the Financial Accounting Standards Board) and empower them to decide and impose their decision on the rest of us. The surprising aspect is not that it works poorly but that it works at all. However, we should recognise that shareholders bear the firm's accounting costs to the same extent that they bear other operating costs of the firm; managers do not pay these costs out of their own pockets. The final

incidence of the cost presumably is on consumers of the firm's products and the benefits from better decisions by investors also tend to be diffused throughout the economy, in the long run. As we said in the introduction to this paper, implementation of the aggregate social welfare criterion of accounting systems is not feasible at the present time.

Even a straight comparison of internal accounting costs is difficult enough, especially when one of the methods under consideration is unfamiliar. The typical reaction of someone who is familiar with one procedure is that a proposed alternative is more difficult. This view may reflect his vision of 'first time through' performance; the 'learning curve' phenomenon is not as prominent in the first picture he sees. In addition, we must keep in mind that new services may become available (e.g. new price indexes, published price quotations) if a new method is widely adopted. Finally, we must not forget the role that computers can play in reducing the cost of what would be tedious calculations and retrieval of data by older methods.

We must be careful to avoid allowing a vague feeling of ignorance and 'difficulty' associated with a new technique to be converted into an unsupported argument that the new method is too costly. This is especially relevant to the evaluation of alternative asset measurement methods and general price level adjustments as the costs of these aspects of accounting are relatively small compared to the costs of the routine, high-volume procedures such as those pertaining to billing and receivables, disbursements, inventory quantities and payroll accounting. It seems quite unlikely that the total annual accounting costs of the average firm would be increased by more than two to four percent (after the first time through) by any choice from among the widely-discussed measurement methods (including historical cost adjusted for changes in a general price index). For example, a vice-president of AT & T estimated that only \$10,000 of its \$728,207,000 1974 accounting costs was spent on producing a rough set of general purchasing power financial statements.⁴ The costs of accounting must be taken into consideration without using them as a club to beat down any proposal for change.

Cost of Utilising Accounting Data

This criterion is closely related to two of the criteria discussed above: understandability and readability and optimal quantity. If the financial state-

ments and accompanying material are not easily comprehended by the users; if they are poorly organised so that the user must spend time searching for data which he wants to consider together; if he must make his own additions, subtractions and divisions in order to obtain the sums, differences and ratios he needs; if he must plough through many pages of details in order to extract the data he needs – all of these circumstances add to the costs of utilising accounting data. These costs take the form of consumption of the user's own time, salaries of professional analysts and subscription fees for investment services. While the difference between the cost of using the data produced by one accounting method and the cost of using that produced by another method may seldom be material, we should keep it in mind for consideration in the minority of cases.

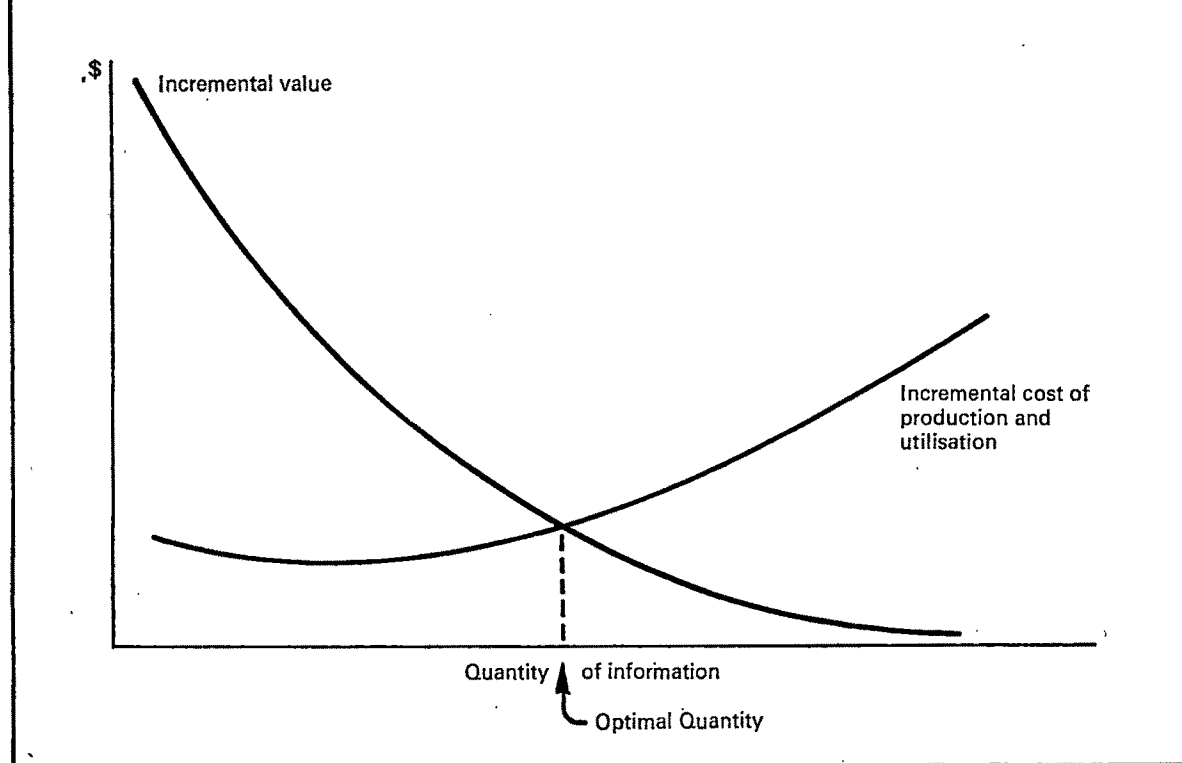
The relationship between the two cost criteria and the optimal quantity criterion is illustrated in Exhibit III. If the accountant starts with the most valuable data he can accumulate and report, then gradually adds data in order of incremental value, we can picture a declining curve of incremental value as the quantity of data increases. If the combined cost of producing and utilising data increases more than proportionately to the increase in quantity as the receiver's analysis chores multiply, a rising and convex cost curve may be superimposed on the same graph. Conceptually, the point (on the data volume scale) at which the incremental value equals the incremental cost is the optimal quantity of data to accumulate and report. We conclude that the optimal quantity criterion cannot be applied independently of the cost criteria.

Applicability of the Criteria

Decision-making is an exercise in differential analysis. 'What difference will it make whether we do this or that?' is the question. Events which are common to the alternative courses of action cannot help the decision-maker choose among them. This applies to accounting decisions as well as to other economic decisions. In many accounting decisions the evaluation procedure will disclose that there is no perceptible difference between method A and method B on several of the criteria but that differences are found on other criteria. For example, if the accounting issue is one of choosing the wording for a line item on the income statement, the alternatives may not differ on the criteria of attribute relevance, reliability, timeliness, optimal quantity, effects via other parties and cost of accounting but they may differ on understandability, cost of utilising and comparability. On the other hand, a choice between historical cost and current-market value for valuation

⁴Warren Brown, in conversation with the author, 17th April 1975.

EXHIBIT III COST AND VALUE OF INFORMATION



of a security owned may be made primarily on the criteria of attribute relevance, reliability, comparability and effects via other parties while the other criteria are insignificant. But each of the criteria has its role. The following list of criteria and accounting choices to which each criterion may be critical may convince the reader on this point:

Relevance of attribute being measured to the decisions of the user – any choice of a measurement method applicable to an asset or liability.

Reliability – many choices of a measurement method.

Comparability:

Interperiod comparability – any proposal to change an accounting method.

Intercompany and intracompany comparability – choices of classification schemes for reporting revenues and expenses.

Comparability of lengths of reporting periods – decision regarding changing length of reporting period.

Understandability and readability – choice of descriptive terms, format or presentation of a note.

Timeliness – choice of length of interim reporting period; choice between a procedure which keeps records up to date daily and a procedure which

requires substantial end-of-period work.

Optimal quantity – many decisions regarding possible aggregation for external reporting of data kept in separate accounts for internal needs.

Effects via other parties – choices of measurement methods.

Costs of producing accounting data – choices of data processing equipment and procedures; choice of publishing forecasts or not.

Costs of utilising accounting data – format decisions; aggregation decisions; choice of publishing forecasts or not.

As we have pointed out before, these nine criteria are not mutually exclusive. One consideration in the decision to emphasise these particular criteria, in addition to the desire to provide full coverage of the factors that affect accounting decisions, is the fear that several criteria which could have been merged would be neglected if not set out separately. Otherwise the number might have been reduced to five or six. The several facets of comparability, for example, are fairly well covered by attribute relevance and reliability. Timeliness is closely related to optimal quantity and both are intimately involved with cost of production and cost of utilisation. In addition to these possibilities for shortening the list

of criteria to be used, there are some candidates for addition to the list. Thus, the reliability criterion could be split into verifiability and lack of bias or timeliness could be broken down into frequency and lag. Another criterion which some empirical researchers would favour is predictive power. It is omitted here only because it cuts across relevance, reliability and sometimes one or two other criteria rather than taking a place alongside them; it appears to have important applications.

Patterns for making accounting decisions

Most major decisions are based on a mixture of objective evidence and subjective opinion, although the mix varies. Some choices of accounting methods, e.g. in several areas in which choices are made for reporting to taxing authorities, are heavily influenced by measurable economic considerations. But many choices in external reporting must be made primarily on the basis of subjective judgments of the consequences of the choice. This does not, of course, mean that an organised technique of decision-making is impossible. In fact, this paper is based on the premise that accounting decision-making can be more 'systematic and rational' than it has been in the past (to our knowledge).

We have all seen lists of steps involved in rational decision-making – but not in the accounting literature. Perhaps such a listing would be helpful in establishing a possible systematic pattern for making accounting decisions:

1. Identify the accounting problem to be solved.
2. Identify two or more possible solutions – the alternative accounting methods (information systems) to be evaluated.
3. Identify the users and nonusers affected by the choice.
4. Identify each user's uses and method of use, e.g. decision techniques, and the nature of the effects on nonusers. Intragroup differences must not be overlooked.
5. For one user group and one criterion, rate the alternative accounting methods for each use and then combine the ratings for all uses by that user group. Repeat for each criterion and each user group.
6. Combine the ratings on the various criteria to obtain a user group's choice. Repeat for each user group.
7. Combine the choices of the various user groups to obtain a final choice of accounting method (if the decision-maker must consider the wishes of more than one user group).

Exhibit IV illustrates steps five to seven of this list, moving from the right to the left of the diagram. (The Exhibit is incomplete due to the space limitation but blank lines are left to indicate that the basic approach permits variation in the numbers of user groups and criteria.) Frequently, only one significant use by a user group need be considered and the analysis leading to the choice of method by one user group on a particular criterion may serve equally well as the basis for another group's choice if one evaluator is representing more than one group, as in the case of the FASB or SEC. When the technique is applied by a particular user, or user group, step 7 (and one level of the diagram) is eliminated. (The general approach appears to be applicable to the making of accounting decisions at any level: society, industry, entity or segment.)

Two serious limitations of this approach to making accounting decisions may be recognised. One is the clarification of users' decision-making techniques that is required by step 4. To some accountants, this is a serious roadblock which requires a major detour. To those who are oriented towards decision usefulness, it is a challenge which must be faced; to expect to be helpful to users without understanding their needs is fanciful. Any partial accomplishment of this requirement is to be preferred to sidestepping it as we can only hope to hit users' needs by chance if we do not even take aim on the target.

The other serious limitation of this approach is the lack of quantification of the preferences that must be identified, compared and combined in steps 5, 6 and 7. Some readers may be tempted to use a point scoring system to convert preferences to numbers. For example, 100 points could be divided among the nine criteria in a particular fashion to represent the maximum significance of each criterion to a particular user group. Then the rating of an accounting method on a criterion would be expressed in a number between zero and the maximum permitted for that criterion. And/or weights could be assigned to the several user groups in order to permit aggregation of the preferences of some groups for a particular accounting method for comparison with the preferences of other groups for another method. But how could the weights assigned to groups, or to criteria, or the score given to any accounting method on one criterion by one user group, be defended? If I give method A nine points on the relevance criterion and you give it only five points, how can either of us justify our scoring?

Exhibit V illustrates how a weighting scheme might be reflected in a scoring sheet and shows hypothetical results of its use by two decision-makers who were faced with the necessity of choosing between the

deferral-amortisation and the immediate expensing methods of accounting for research and development costs. The particular scheme illustrated here is based on the assumptions that the decision-maker must recognise the rights of several interested groups and that the ratings on all of the criteria except relevance do not vary across groups. For example, the deferral-amortisation method gets the same rating on the cost-of-production criterion by all groups of interested parties – an assumption that appears tenable if one independent party is doing the rating but would not be reasonable if each group were rating the methods as it saw them. (Note that the relatively low weight assigned to the effects via other parties criterion reflects the tendency of the effects

recognised by different groups to cancel each other out except for the managerial suboptimisation effect which is a net disadvantage to society. Weights assigned to this criterion may well be higher on scoring sheets designed for partisan use, e.g. by managers only or employees only.)

The example in Exhibit V is designed to show that the use of a point scoring system cannot overcome the subjectivity of the decision-makers' preferences. Even though the two individuals, DM₁ and DM₂, are in perfect ordinal agreement, i.e. they have no disagreements as to the rankings of the two accounting methods on any criterion for any interested group, they still disagree on the final choice. The source of their disagreement is differences in the strengths of

EXHIBIT V

Example of accounting decision scoring sheet applied by two decision makers to the case of accounting for research and development costs

	<i>Maximum Scores</i>	<i>Defer and Amortise</i>		<i>Expense Immediately</i>	
		DM ₁	DM ₂	DM ₁	DM ₂
Relevance	40	30	25	5	15
To Owners	20				
To Long-term Creditors	9				
To Short-term Creditors	5				
To Managers	2				
To Employees	2				
To Public	2				
Reliability	20	8	3	18	20
Comparability	12	3	3	8	8
Effects via Other Parties	6	4	4	1	1
Understandability	6	3	3	5	5
Timeliness	4	3	3	3	3
Optimal Quantity	4	2	2	3	3
Cost of Production	4	3	3	4	4
Cost of Utilisation	4	3	3	4	4
Total Scores	100	59	49	51	63

DM₁ and DM₂ are two hypothetical individuals who have the responsibility of choosing between the deferral-amortisation and the immediate expensing methods of accounting for research and development costs.

their preferences for the deferral-amortisation method on the relevance criterion and for the immediate expensing method on the reliability criterion. (Incidentally, the ratings by DM₂ may be interpreted as the author's guess as to the FASB's views which led to its choice of the immediate expensing method.) Generally speaking, scoring sheets may serve as check lists, as an aid to an individual in organising his analysis and as a basis for identifying the locus of disagreement among members of a decision-making group.

It is important that we recognise that all of the numbers on the scoring sheet, or on any similar scoring sheet, are lacking in objectivity, with the possible exception of those in the four decision-maker columns on the cost of production line (where it is possible to obtain some data on which independent observers would agree). The development of 'public models' for rating accounting methods on the other criteria and for weighting the criteria and the interest groups is a prerequisite to the objective application of this approach to accounting choices. The subjective selection of numbers to represent personal opinions (private models) and subsequent arithmetic operations on those numbers do not make the procedure objective, and while the literature of multi-attribute decision-making (e.g. Cochrane and Zeleny, 1973 and Green and Wind, 1973) is relevant to the multiple-criteria approach to accounting choices, it does not have a solution to this problem. This does not mean that a decision-making procedure that calls for the recognition of uses, users, alternatives and criteria cannot be helpful; it only means that it cannot be shown to yield an unequivocally correct answer. When an objective (and otherwise suitable) procedure becomes available, the one suggested here should be set aside. In the meantime, the multiple-criteria approach to accounting decisions may play a useful role.

Conclusion

Maximisation of social welfare is as appropriate a goal of decision-making in the areas of external financial reporting as it is in any other public policy area but, unfortunately, it is also almost as difficult to approach in quantitative terms in the former domain as in others. Until such a time, if it ever arrives, when a mathematical model of the social welfare approach becomes operational, those who are faced with accounting choices may be able to improve their decision-making techniques by identifying and applying a set of criteria of desirable accounting methods. The purpose of this paper has been to

describe such a set of criteria and to suggest some techniques for its use in making accounting decisions.

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The Accounting Profession and Disclosure in Published Reports, 1925-1935

J. R. Edwards

The importance of full and frank disclosure in company reports presented to the external user of accounting information is now widely accepted by the various partners in business. *The Corporate Report*, a discussion paper published in July 1975 by the Accounting Standards Committee, is evidence of the fact that the professional accounting bodies favour accounting reports designed to ensure that, as far as possible, the financial information required by the various external users for decision taking purposes is readily available. It is true that some corporate managers would still prefer to keep the financial affairs of their business an essentially private matter. Nevertheless, there are many firms which are willing to publish accounting information which exceeds the reporting obligations imposed upon them by the Stock Exchange and Company Law.

A consensus in favour of disclosure has evolved gradually over the last half a century, prior to which secrecy in financial reporting met with very little opposition. Company law had made an early attempt to impose upon internal management certain obligations in connection with accountability. The Joint Stock Companies Act of 1844 which enabled business organisations to obtain the fundamental attribute of corporate personality merely by registering under the Act, instructed company directors to deliver accounting reports periodically to independent auditors, and then present the audited balance sheet to the shareholders. With the subsequent demotion of the relevant accounting and audit provisions to Table B attached to the Joint Stock Companies Act 1856 the legislature abandoned any attempt to regulate joint stock companies generally in connection with these matters until the re-introduction of the audit requirement in 1900. The Companies Act of that year also required directors to circulate a balance sheet to the members but imposed no obligations as regards either the content of the balance sheet or the publication of a profit and loss account. The dicta

in *Newton v. Birmingham Small Arms*¹ provided further support for the view that a balance sheet could be as uninformative, and even misleading, as management might desire, provided it did not show the financial position of the company to be better than it in fact was. The situation was aggravated by the unsatisfactory position in connection with profit measurement. Procedures which had been developed by accountants for the measurement of profit, and which were regarded as representing best practice, had not achieved widespread acceptance. In this context the permissive nature of the relevant case law² provided further ammunition for managers determined to publish a profit figure sufficient to cover the payment of the annual dividend, rather than a profit figure which fairly reflected the economic activity which had occurred during the accounting period. The consequence was that the limited quantity of financial information which was published could be designed so as to mislead rather than educate the recipient.

The event which, more than anything else, caused a reappraisal of the assumptions upon which published accounting reports were constructed was the prosecution brought by the Law Officers of the Crown against the auditor and the chairman of the Royal Mail Steam Packet Company³ (RMSP) in 1931. The purpose of this article is to consider the impact of

¹1906, 2 Ch. 378, in particular J. Buckley at p. 387.

²There were a number of cases which came before the courts in the latter part of the 19th century and the early part of the 20th century which concerned the calculation of profit available for dividend. The decisions reached by the courts, which allowed management considerable discretion in connection with this matter, are discussed by B. S. Yamey, 'The Case Law Relating to Company Dividends', in *Studies in Accounting Theory*, edited by W. T. Baxter and S. Davidson, Sweet and Maxwell, 1962, p. 428.

³*Rex v. Lord Kylsant and another*, 1931. The trial at the Old Bailey, London, is reported in *The Royal Mail Case*, edited by C. Brooks, Hodge, 1933.

the findings of the court in RMSP on accounting thought and practice. Accordingly, the reporting practices of companies, and the attitude of the accounting bodies towards disclosure, during the years immediately prior and subsequent to this prosecution being brought, will be examined.

Greene Committee

A Company Law Amendment Committee, chaired by Mr. Wilfred Greene KC, was appointed by the Board of Trade in January 1925 to undertake a full review of the working of the Companies Acts then in force. The minutes of evidence taken before the Committee comprise an authoritative source of information concerning contemporary accounting practices, and the attitude of various witnesses towards those practices. The accounting profession had three representatives on a committee of fourteen: Mr. William Cash, a past President of the Institute of Chartered Accountants in England and Wales (ICAEW); Sir James Martin, who was the President of the Society of Incorporated Accountants and Auditors (Society) in 1922–3 and Joint President in 1934; and Sir William McLintock representing the Scottish Chartered Accountants.

The *modus operandi* of the Committee was to circulate a memorandum listing questions on which comment was invited from such 'individuals, corporations and institutions as the Committee thought best able to assist them'.⁴ The correspondents or their representatives were then examined *viva voce* by the Committee. Each of the main accountancy bodies at that time was circulated by the Committee: the ICAEW, the Society and the Scottish Chartered Accountant bodies. In addition Mr. Frank Whinney, a partner in Whinney, Smith & Whinney, was invited to submit a memorandum in his personal capacity. The fact that memoranda were invited from three accounting institutions, and the amount of time devoted to the examination of those accountants who attended to give evidence, is a clear indication of the interest shown by the Committee in accounting matters.

Evidence taken before the Greene Committee

Disclosure⁵

The memorandum submitted by the ICAEW, and also the memorandum submitted by the Law Society,

were opposed to the imposition of additional reporting obligations upon corporate management. The Law Society's memorandum is mentioned because of the remarkable similarity of its submissions in connection with disclosure and secret reserves to those incorporated in the ICAEW's memorandum. This similarity is interesting since it suggests that some lawyers and accountants were *ad idem* on such matters in the mid 1920s, a correspondence which was not so apparent with the findings of the court in the RMSP case six years later.

The view shared by both the ICAEW and the Law Society was that most directors were honest, and the caution sometimes displayed in regard to disclosure was in most cases wise, since it would be undesirable from the point of view of the company to make a mass of information available which could be used by competitors. The comments made by the Law Society and the ICAEW in connection with the plight of the creditor (who often carried the main part of the risk associated with business activity owing to the continued reluctance of the legislature to prescribe any minimum capital requirement) are unsympathetic. The view is expressed by both institutions that the only users of accounting reports whose requirements the legislative provisions are primarily designed to fulfil are those of the shareholder. The observation that 'creditors can ascertain as much about the financial position of the company as they can about the individual'⁶ ignores the *raison d'être* of company law.

In view of the fact that the ICAEW was unwilling to recommend that any additional disclosure obligations be placed on company directors, the following extract from an address by Sidney Pears, who represented the Institute before Greene, to the Manchester Society in 1929, is intriguing.

... under the old [1908] Act, as far as I am aware, there was no obligation in law to compel the directors of a company to separate the assets or to separate the liabilities, and they were within their legal rights in showing capital, creditors and the balance of profit and loss ... on the one side, and sundry fixed assets, debts, etc. on the other side. Now, although such a statement may possibly come within the letter of the law, I think you will

group accounting provisions introduced by the Companies Act 1948 is discussed in an article by J. Kitchen, 'The Accounts of British Holding Company Groups: Development and Attitudes to Disclosure in the Early Years', *Accounting and Business Research*, Spring 1972, p. 114.

⁶Appendix AA to minute of evidence taken before the Greene Committee on day 21, p. lxxviii. A similar sentiment is expressed by the Law Society in appendix P to minutes of evidence for day 14, p. xlix.

⁴Cmd. 2657, p. 3.

⁵The Committee devoted a great deal of attention to the problems of disclosure specifically associated with the accounts of holdings companies. The background to the

agree it would not be of much interest to a shareholder.⁷

The apparent satisfaction with the present state of company law displayed by the ICAEW in the memorandum which it submitted to the Greene Committee is also in direct contrast to the criticisms directed at contemporary reporting standards by committee members and other witnesses called to give evidence. An indication of actual practice in connection with the publication of profit and loss accounts is given by Sir William McLintock in his examination by Mr. F. Whinney:

It is not the practice with, I suppose, one company in a thousand even to disclose their profit and loss account except by totals: one on the credit side and one total on the debit and, generally speaking, the balance sheet merely shows the balance of profit and appropriation for dividends.⁸

Elsewhere, the memorandum submitted by the Society of Incorporated Accountants and Auditors observed

... an increasing tendency for the information given in balance sheets to be attenuated ...⁹

In order to stimulate an improvement in reporting standards, the Society proposed a list of headings to be regarded as a statutory minimum for balance sheets. In the Society's view such a list would

counteract the tendency in recent years to consolidate items in the balance sheet which might be shown separately. Thus more information would be given to shareholders without prejudicing the commercial interests of the company.¹⁰

Further support for the contention that in the years up to 1925 accounting information was becoming less informative is found in discussion between Sir William McLintock and the Senior Official Receiver in Companies Winding Up.

You are aware, of course, that there are companies whose annual balance sheets are models of obscurity. Take one for instance, a large company in London whose total assets amounted to £14.7 million and they have only one heading for the whole lot ... the provisions of S.113 [of the Companies Act 1908] ... have had a very narrow meaning placed on them in recent years.¹¹

The fact that there was a decline in reporting

standards may well be a reflection of the fact that businesses were hard pressed during the early 1920s. In the immediate post-war years industry was faced with particular problems of re-adjustment, both in order to fulfil the requirements, internally, of a peace time economy, and to cope more effectively with the changing pattern of world trade. In this respect British industry, at the beginning of the 1920s, was unbalanced. Consequently it was absolutely essential to restructure the productive processes within the basic industries along the most modern lines, and to achieve a speedy transfer of resources from the declining industries to those industries which were likely to benefit from a rapid expansion of demand.¹²

Some of the responsibility for delay in the process of readjustment may be attributed to the nature of accounting reports prepared during the inter-war years, or at least to the way in which management interpreted and used those reports. An important consequence of the distinction between capital and revenue, which is central to the measurement of accounting profit, is that it can produce an immense figure for fixed investment which appears in the periodic balance sheet. Although the balance sheet is designed to record the financial effect of past decisions, it is not unlikely that, in the absence of much other accounting data, management would have based decisions concerning the future allocation of resources at least partly on that document. Viewed in this context it is not surprising that managers, within the depressed industries, should have been reluctant to jettison their existing productive processes, gradually built up over many years, in favour of relatively new and unproved methods. The consequence was that many of these managers refused to recognise the full implications of contemporary economic developments, which were to have the effect of rendering unremunerative heavy investments in capital assets.¹³

Also relevant to any attempt to explain the external reporting practices adopted by businesses in the 1920s is the fact that managers remained optimistic that the decline in demand for their products was of a temporary character and would revive with the imminent upturn in the trading cycle.¹⁴ This combination of stubbornness and optimism may well explain why directors decided to place the narrowest

⁷'The Companies Act 1928', *Accountant*, Vol. LXXX, 1929, p. 149, at p. 150.

⁸Minutes of evidence, day four, para. 926.

⁹Appendix FF to minute of evidence for day 24, p. lxxxiii.

¹⁰Ibid, p. lxxxiv.

¹¹Minutes of evidence, day three, paras. 633 and 635.

¹²W. Ashworth, *An Economic History of England 1870-1939*, Methuen, 1960, Ch. 13 especially p. 321.

¹³A. J. Youngson, *The British Economy 1920-1957*, Allen and Unwin, 1960, pp. 35-7.

¹⁴J. H. Dunning and C. J. Thomas, *British Industry*, Hutchinson, second edition 1963, p. 25.

interpretation possible on statutory reporting obligations. This would have allowed management to conceal financial information which might otherwise have provided some indication of diminished profitability¹⁵ and consequently have rendered it that much more difficult for firms to attract the funds required to finance re-equipment, particularly during a period when investment capital was scarce.¹⁶ In this situation a new Companies Act was required, not so much to accelerate an improvement in standards, as was the objective of the 1948 Act, but to arrest the decline in standards which was becoming apparent.

Secret Reserves

The memorandum circulated by the Committee to the various correspondents asked for comments on secret reserves (question 6f). The comments from many of the witnesses indicate unrestricted approval of this device for smoothing the apparent profitability of companies by making undisclosed transfers between the profit and loss account and a secret reserve fund. The memorandum submitted by the Council of the Law Society expressed the following view:

The provision of a secret reserve is for very many companies a sound business policy and of the greatest advantage. It would not be in a company's best interests that it should have to indicate that it has in one year drawn so much from reserve to meet an increase in the price of raw materials, etc. and that next year it has put so much back into reserve to restore it to a 'safe' figure. Transactions of this nature are necessary to meet fluctuations in trade and if disclosed the indications afforded as to the course of the company's business would be carefully scrutinised by competitors . . . *too much disclosure should not be insisted on and the greatest possible freedom should be allowed to those responsible.*¹⁷

In another memorandum Mr. F. D'Arcy Cooper, chairman of Lever Brothers Limited, probably the

largest conglomerate in Britain in the 1920s, supported the maintenance of a reserve fund to fall back on in bad times with the opinion that,

Otherwise, in 1921 you would not have had a company in England which was solvent.¹⁸

Other comments add a note of caution. Mr. F. Whinney expressed the opinion that although he was not in favour of full disclosure in connection with secret reserves, he believed that their existence should be indicated.¹⁹ Again, the ICAEW, although repeating verbatim the view expressed by the Council of the Law Society and underlined above, did indicate some appreciation of the potential dangers when it added that,

It is always open to the auditors to report to the shareholders any exceptional reserves which are made or written back . . . if the directors do not disclose them on the face of the accounts or in their report to the shareholders.²⁰

As it transpired the profession's definition of exceptional was to prove unacceptable to society in general.²¹ The Society was rather less convinced of the merits of secret reserves than was its sister body. The fact that the Society foresaw the potential dangers of this device is made clear by its willingness to approve the principle

. . . provided always that they are not used for the deliberate manipulation of profits and/or for unjustifiable dealings in shares by the directors.²²

It is fair to say that the concept of secret reserves did, overall, receive approval from those witnesses who gave evidence before the Greene Committee.²³ The explanation for this attitude is that up until the mid-1920s it was only the advantages resulting from the maintenance of secret reserves which had become generally apparent. Mr. G. Stanhope Pitt who was called to give evidence on behalf of the Society, of

¹⁸Minutes of evidence, day 18, para. 3852.

¹⁹Appendix to minutes of evidence for day four, p. xvi.

²⁰Appendix AA to minutes of evidence for day 21, p. lxviii.

²¹During the course of the proceedings Lord Plender, who was the acknowledged leader of the accountancy profession at that time, Mr. B. O'D. Manning, who was an expert witness, and the Presidents of both the Society and the ICAEW, all expressed the view that the accounting treatment adopted by the Royal Mail Company, in connection with reserves transferred to the credit of the profit and loss account, represented normal practice. See *The Royal Mail Case*, pp. 40, 177, 189 and 190.

²²Appendix FF to minutes of evidence for day 24, p. lxxxiv.

²³Support for the disclosure of hidden reserves came only from the Co-operative Congress (appendix DD to minutes for day 23), and Dr. J. Andrew representing the Faculty of Procurators, Glasgow (minutes for day 26, para. 5837).

¹⁵The use of accounting information to mislead rather than inform also found expression in prospectuses issued by many companies during the 1920s. Statements of average profits were used to imply financial stability when, in fact, the trend of profits was sharply downwards: *The Royal Mail Case*, edited by C. Brooks, Hodge, 1933, pp. xxx-xxxi, and minutes of evidence taken before the Greene Committee from G. Stanhope Pitt, president of the Society of Incorporated Accountants and Auditors, day 24, paras. 5352-6.

¹⁶S. Pollard, *The Development of the British Economy 1914-1967*, Arnold, second edition 1969, p. 232.

¹⁷Appendix P to minutes of evidence for day 14, p. xlix (my emphasis).

which he was president, also saw some virtue in the maintenance of secret reserves:

If you refer to the case of banks, within the last few years we all know that banks have made very large bad debts – it is common knowledge – and there is no doubt in my own mind that the secret reserves were of great value, and also it applies equally to such institutions as insurance companies. I have seen a good deal of secret reserves, and I have never known them to be administered unfaithfully, and I have known them to be of the very greatest advantage, not only to the institutions themselves, but also to the community at large.²⁴

Some evidence of where the Committee's sympathies lay in connection with secret reserves was given by Mr. W. Cash in a lecture delivered before the Bristol Society of Chartered Accountants in 1929:²⁵

... we know that the strength of a commercial undertaking lies in the hidden reserves.

It is not therefore surprising that the Committee should have chosen not to recommend that companies be obliged to disclose their hidden reserves.

Report of the Greene Committee

The philosophy underlying the proposals made by the Committee is outlined in the Preliminary to the Report:

The system of company law and practice in force in England and Scotland has been gradually evolved to meet the needs of the community at large and the commercial community in particular. We consider that in general it fulfils this object in a highly satisfactory manner. It is a system well understood by those who have to deal with it, *it has stood the test of years, and in our opinion should not be altered in any matter of principle except where alteration is imperatively demanded.*

The evidence satisfies us that the great majority of limited companies both public and private are honestly and conscientiously managed . . . We are further satisfied that the abnormal conditions prevailing during and since the war have been largely responsible for some of the matters which have given rise to unfavourable public comment, and we are of opinion that *the return to more normal conditions* will tend to eliminate certain unsatisfactory features which have shown themselves in recent years.²⁶

It is clear that in the Committee's view nothing should be done to disturb the existing state of the law, in the absence of any major financial disaster. The comment in paragraph 7 suggests that profitability stimulates honesty among the business community. This may be so, but in the absence of the Committee being able to guarantee permanent prosperity amongst the business community, steps should have been taken to counter practices which might foreseeably be devised in a much tighter financial situation. The Committee appears to have accepted the ICAEW's desire to keep to an absolute minimum additional legislation in connection with disclosure in published accounting reports. The report did include proposals for minimum disclosure in the published balance sheet,²⁷ although these did not go nearly as far as the recommendations put forward by the Society. The Report also recommended that a balance sheet and profit and loss account be presented to the members at each annual meeting, and that the former document be circulated to the members prior to the meeting. It was further recommended that a copy of the last audited balance sheet be filed annually with the Registrar of Companies. The proposals did not go very far. The Report imposed no requirement as regards the auditor's qualifications, did not specify what the profit and loss account should include, and its provisions concerning the treatment of the results of subsidiary companies were so general as to be almost valueless in practice.²⁸

The Companies Act 1928 followed the recommendations made by the Greene Committee in connection with accounting matters. The opinions expressed in the official histories of the Society and the Institute on the content of the consolidating Act of 1929 are as follows:

Society: 'The Act of 1929 was accepted as a balanced piece of legislation and represented the general level of professional opinion in accountancy, so far as accounts and audit were concerned. A few years later, a distressing event induced some people in the profession to wonder whether the Act should have gone further in prescribing the

²⁷Cmd. 2657, para. 72, recommendation V.

²⁴Minutes of evidence, day 24, para. 5385.

²⁵'Points in the Companies Act, 1928, particularly affecting accountants', reported in *Accountant*, Vol. LXXXI, 1929, p. 13, at p. 20.

²⁶Cmd. 2657, p. 4 (my emphasis).

²⁸The accounts of holding companies were required to state how the aggregate profits and losses of subsidiaries had been dealt with in the accounts of the holding company (recommendation VII). This requirement was satisfied in practice by merely reporting that dividends received had been credited to the holding company's profit and loss account and that losses incurred by subsidiaries had been provided for. The actual sums involved did not have to be reported.

form and contents of the balance sheet and profit and loss accounts.²⁹

ICAEW: 'On the whole the Act was regarded as a sound one, reflecting the best professional practice . . . But excellent though the 1929 Act was so far as it went, accountants did not have to wait long before having it painfully brought home to them that it did not go far enough'.³⁰

The fact that the disclosure provisions included in the Act nevertheless went beyond the Institute's own proposals might also have been mentioned.

The significance of the Companies Act 1928

The kind of problem which it was the function of the 1928 Act to remedy is illustrated by the following observation made by *The Accountant* concerning the reporting practices of the Cunard Company:

The past history of the company, however, shows a tendency to reduce the information afforded by the accounts. It was in 1922 that the company ceased to give a revenue account . . .³¹

A contemporary view of the 1928 Act is given in a leader in *The Accountant* dated 8th January 1929:

In many ways the 1928 Act strengthened the position of accountants, and it did so not so much by handing over to them definite powers as by legalising practices which have always been regarded as the best professional standard . . .³²

This apparent satisfaction, on the part of *The Accountant*, with the accounting provisions of the Act was short-lived. Soon afterwards this journal expressed the view that the Act should have done rather more than approve best practice.

The publication of a profit and loss account is also made compulsory for the first time, but the provisions in this respect do not go far enough, inasmuch as the nature or requirements of such an account are not defined. It will therefore, apparently, continue to be open to companies to publish figures purporting to form a profit and loss account, but which, in fact, do not comply with that description . . .³³

²⁹ A. A. Garrett, *History of the Society of Incorporated Accountants 1885-1957*, University Press, Oxford, 1961, p. 158.

³⁰ *The History of the Institute of Chartered Accountants in England and Wales and its Founder Bodies 1870-1965*, Heinemann, 1966, p. 75.

³¹ *Accountant*, Vol. LXXX, 1929, p. 419

³² '1928-1929', a leading article, *Accountant* Vol. LXXX, 1929, p. 1

³³ 'The Companies Act 1928-XVI', *Accountant*, Vol. LXXX, 1929, p. 102, at p. 104.

In September 1929 follows the observation that,

It will thus still be possible to issue a so-called profit and loss account . . . in which the amount of depreciation is unstated so that shareholders may even be kept in ignorance as to whether any such provision has been made.³⁴

One might have expected some faith to be shown in the ability of the external auditor to ensure that this was done, but such scepticism as existed appears to have been fully justified. The November 1929 issues of *The Accountant* report³⁵ a disagreement between the shareholders and directors of the Cheshire United Salt Co. Ltd. It appears that at the annual general meeting an amendment was moved and carried, by the shareholders, that the accounts for the year to 30 June 1929 should not be adopted but referred back to the board in order that proper depreciation might be shown. The amended accounts included a depreciation charge which reduced the reported profit by 20 per cent.

In accounts published during 1929 there was not, immediately, the rapid adoption of improved practices which might have been anticipated by users of accounting reports. The accounts of Lamport & Holt, Ltd. revealed that, 'out of total assets of £8,150,457, ships and shipping investments are stated at £7,159,526',³⁶ whilst in the balance sheet of the Cheshire United Salt Co. Ltd., referred to above, freehold and leasehold works covered £120,053 out of total assets of £131,353.³⁷ *The Accountant* also drew attention to the maintenance of reserves in the balance sheet of certain companies, without any indication of their extent and often not even a reference to their existence. The balance sheet of the Imperial Tobacco Co. Ltd. for the year to October 1928 included the item, 'Creditors, provisions for taxation and bonus to customers, estimated capital liability under dividend guarantees; amounts set aside for contingencies and to meet fluctuations in the value of leaf tobacco stocks, employers' liability, marine and other funds', £14,628,828,³⁸ whilst the accounts of J. Lyons for the year to 31st March 1929 included the figure £2,352,877 described as, 'Trade and other creditors, bills payable, credit balances and reserves'.³⁹

The rather general nature of the various obligations contained in the 1928 Act, in connection with the

³⁴ 'Company Accounts and the New Act', a leading article, *Accountant*, Vol. LXXXI, 1929, p. 313, at p. 314.

³⁵ *Accountant*, Vol. LXXXI, 1929, pp. 588 and 594.

³⁶ *Accountant*, Vol. LXXX, 1929 p. 247.

³⁷ *Accountant*, Vol. LXXXI, 1929, p. 558.

³⁸ *Accountant*, Vol. LXXX, 1929, p. 218.

³⁹ *Ibid*, p. 807.

publication of a company's financial affairs, left considerable scope for obscuring the reported results of business activity. The decision of the Committee to omit any detailed proposals in connection with the publication of financial information might well reflect the Committee's acceptance of the observation made by a number of witnesses, including the ICAEW,⁴⁰ that the shareholders can always ask the directors for additional information at the annual general meeting. It appears, however, that such requests would not always have elicited the anticipated response from management. We are told⁴¹ that the shareholders of the Rio de Janeiro Flour Mills & Granaries Company deduced the existence of an undisclosed contingency reserve from the wording of the profit and loss account, and accordingly asked the chairman to explain why the fund should not appear in the accounts so that they might know what was available to be drawn upon in future lean years. The legitimate curiosity of the shareholders was not satisfied, since the chairman merely replied that there were certain contingency reserves but it would be inexpedient to disclose their actual amount. The chairman of the RMSP group of companies was equally unwilling to meet demands from his company's shareholders for information to which they might reasonably be regarded as entitled as investors. At the annual general meeting of the group held in 1930, Lord Kylsant categorically refused to give information for which he was specifically asked.⁴²

As dissatisfaction with contemporary practices in connection with disclosure in published accounting reports increased, so the true significance of secret reserves became more fully appreciated. The widespread popularity of secret reserves until this time may be attributed to the fact that their creation was regarded as reflecting due conservatism on the part of management in connection with financial matters, since their maintenance guaranteed the existence of uncommitted financial resources in excess of the amount appearing in the balance sheet. During the inter-war years, however, the profit and loss account replaced the balance sheet as the primary accounting report used to assess the progress and prospects of a firm. The significance of secret reserves for the information appearing in the profit and loss account is rather different from its impact upon balance sheet figures. The creation and utilisation of secret reserves results in the understatement and overstatement

respectively of reported profits in relation to the actual trading results of the firm. The scope which secret reserves provided for distorting the actual behaviour of profits from one accounting period to the next was referred to and criticised in June 1929 by *The Accountant*:⁴³

The covering up of profit and loss figures by the inclusion of extraneous items of unstated amounts is always a matter to be deplored. Shareholders should have presented to them a profit and loss account which leaves no doubt as to the actual result of the year's operations, and such items as 'Balance from trading account after crediting claim for repayment of income tax and transferring £13,500 from advertising reserve, £11,943' (in the accounts of R. & J. Hill Ltd., for the year to 31 March 1929) should find no place in the accounts of a public company.

The disillusionment of *The Accountant* with the limited effect which the accounting provisions of the Act were having in practice continued. A leader in *The Accountant* published in September 1929 expressed the following view:

It will be in the highest degree unfortunate if the accounting provisions of the new Act fail to have the effect desired and anticipated by the framers of the measure. It is precisely in the case of companies which have something to hide that the fullest disclosure of the financial position is most desirable, and a host of recent promotion and underwriting scandals render this necessity still more apparent . . . it will be regrettable if these safeguards (for investors which the new Act is intended to provide) are not as effective in practice as on paper.⁴⁴

This was a bit pessimistic. The new Act only came into force in respect of accounts presented to shareholders after 1 November 1929. The content of the new Act was widely known but, although unfortunate, it was perhaps not surprising that directors were unwilling to comply with its provisions until statutorily required to do so. Although some companies continued to prepare accounting reports which remained almost meaningless, there was a general improvement in reporting practices in the months following the Act being given legal force. The improvement was particularly noticeable in connection with the disclosure of information on the assets side of the balance sheet. It was in this area that the 1928 Act was most specific, the main requirements

⁴⁰Appendix AA to minutes of evidence for day 21, p. lxviii.

⁴¹*Accountant*, Vol. LXXX, 1929, p. 126.

⁴²'Shareholders and Directors', a leading article, *Accountant*, Vol. LXXXII, 1930, p. 821.

⁴³*Accountant*, Vol. LXXX, 1929, p. 718.

⁴⁴'Company Accounts and the New Act', *Accountant*, Vol. LXXXI, 1929, p. 313.

being that a distinction should be made between fixed and floating assets, and that the amount of goodwill and investments in subsidiary companies should be stated separately.

The new Companies Act undoubtedly brought about an improvement in the reporting practices of Bovril Ltd.⁴⁵ In the accounts for the year ended 31 December 1928, £3 million out of £6 million appearing on the assets side of the balance sheet were covered by the description 'Goodwill, trademarks, freehold and leasehold properties and interest in associated companies, Government stock, etc.' The 31 December 1929 balance sheet reveals *inter alia*:

Goodwill and trademarks	£2,414,323
Freehold, leasehold properties	£241,508
Plant, motors and office furniture	£40,755
Debts due from subsidiaries	£204,552

The fact that over 80 per cent of the 1928 'omnibus' item comprised intangibles was now revealed. The legal requirement that such particulars should be given as are necessary to disclose the general nature of the assets of the company was sufficiently specific to encourage many directors to increase the number of groups within the fixed asset section of the balance sheet, although there is little evidence of firms being willing to go a step beyond this and report figures for accumulated depreciation to date.

Elsewhere in company accounts improvement was not so marked even after the Act came fully into effect. Profit manipulation and the maintenance of secret reserves persisted. The profit of the Bradford Dyers Association for the year to 31 December 1929 is described 'after crediting surplus provisions in respect of excess profit duty and corporation profits tax'.⁴⁶ The balance sheet of Spratts Investment for the year to 31 December 1929 includes the item 'Sundry Creditors, Credit Balances, and Dividends on Preference Shares to date', £169,752.3.11.⁴⁷ Whilst the profit and loss account of Rylands & Sons, Ltd. for the year to 31 December 1930 included the following item, 'By profit including Divs. and Int. received, and Transfers from Contingency A/c's, and after charging Maintenance, Repairs, Depreciation, Income Tax, Salaries of Man. Directors, Bad Debts and other expenses £106,752.16.9'.⁴⁸

It is fairly clear that where the Act placed some specific obligation on directors, this was complied with. Where no such obligation was imposed informa-

tion did not gratuitously emerge. To suggest that businessmen were not complying with the spirit of the Act probably attributes too much to that Act. No reference was made in the Act to the inclusion of any detail in the profit and loss account, or even that it should disclose the profit earned during the current year. Only a profit and loss account was specified and this was all that subsequently appeared, and in name only. Also, no obligation was placed on directors to detail items on the credit side of the balance sheet. The legislators might have intended that fuller disclosure should be forthcoming, but this could not be deduced from the Act. It should be mentioned, however, that the accounts prepared by some companies did go far beyond the specific obligations placed upon them by the 1928 Act.⁴⁹

Criticism of the audit function

Contemporary dissatisfaction with the professional accountant goes deeper than the criticism implied in the failure to obtain more full and frank disclosure from management. E. E. Spicer wrote, prophetically, in June 1929:

We [the accounting profession] are apt, at the present time, to shirk responsibility and play for 'safety first', and thus it happens that from time to time the public receives a financial shock and the usefulness of auditors and audits are temporarily questioned.

To take a simple illustration, the accounts of a company having a controlling interest in several subsidiary companies are presented at the annual general meeting and passed without comment. There is nothing sufficiently definite in the auditor's report to arouse the sleepy shareholder, and thus, when an extraordinary general meeting of the company is called three months later to consider a resolution for the reduction of capital, he wakes up with a start in no very good humour.

The auditor, has, of course, covered himself legally, but whether, by his action, he has enhanced the reputation of the profession, is a matter of very grave doubt.⁵⁰

⁴⁵*Accountant*, Vol. LXXXII, 1930, p. 231.

⁴⁶*Ibid.*, p. 331.

⁴⁷*Ibid.*, p. 394.

⁴⁸*Accountant*, Vol. LXXXIV, 1931, p. 289.

⁴⁹The accounts of the Dunlop Rubber Company for the year ended 31 December 1929 were revised to show the profit before and after appropriation, whilst the balance sheet items were grouped under relevant headings, including current assets and current liabilities. Significant progress was also apparent in the accounts presented to shareholders during 1930 by, for example, John Barker, Army & Navy Stores, Ever Ready, Gamages, John Lewis and Harrods.

⁵⁰E. E. Spicer, 'The Future of the Accountancy Profession', *Accountant*, Vol. LXXX, 1929, p. 705, at p. 707.

It appears that there were non-accountants who were equally unconvinced of the value of the external audit. *The Accountant* reports that, at a meeting of Marconi's Wireless Telegraph Co. Ltd. in 1929, Dr. Seamus O'Beirn, chairman of the Irish Association of Marconi shareholders, made a sweeping condemnation of the auditors' work generally:

I have no hesitation in saying that the auditors' certificate is no guarantee whatsoever that everything is right with the company ⁵¹

The Accountant rejects Dr. O'Beirn's criticism and continues:

Despite this attack on the profession there can be no doubt that with very few exceptions the audit of the accounts of public companies is carried out conscientiously and well The vigilance of the auditor is evident in the certificate on the latest balance sheet of the Royal Mail Steam Packet Co. (31 December 1928). In this case the auditor has seen fit to sign the certificate 'subject to the values, under present conditions, of the investment in allied shipping companies . . .'. The auditor has also brought to notice the fact that depreciation of the fleet has been calculated at a lower rate than hitherto. These are matters which vitally affect the shareholders and should receive their attention without delay.⁵²

It is ironic that the audit of this company's accounts should have been put forward as a good example, since they were the accounts of a company against whose auditor was very soon to be brought perhaps the best known prosecution for failure to fulfil the duty to ensure that the published accounts fairly represent the company's financial affairs.

The Royal Mail case

Although some dissatisfaction with financial reporting and auditing practices was expressed, in some quarters, during the period immediately following the passage of the Companies Act 1928, it is unlikely that anyone foresaw a disaster of the magnitude that was soon to befall accounting and the accountancy profession. The fact is that during the first three decades of the twentieth century secret reserves had achieved almost complete approval and respectability. They had received the approval of the courts in 1906 and the implied approval of the Greene Committee in 1925 and the legislature in 1928. Secret reserves commended themselves to company chairmen

generally, and were regarded as ' . . . one of the cornerstones of modern company finance'.⁵³

Some uneasiness with the consensus in favour of secret reserves did exist here and there but, in the absence of empirical evidence, the extent of the potential hazards inherent in this technique was not fully appreciated. The advocates of secret reserves were, however, able to produce empirical evidence in support of their case. They drew attention to the fact that, during the 1920s, the commercial banks benefited from the existence of financial strength considerably greater than was apparent from the accounting reports prepared at the beginning of this difficult period. This enabled banks to weather a temporary downturn of fortunes. The same was the case with many firms, and only those whose reserves were rather shallower, or whose period of recovery was rather slower, failed. This is the case for reserves, but these need not necessarily be secret reserves. The use of secret reserves to distort the apparent trend of profit may well have had a considerable and deleterious effect on the allocation and re-allocation of resources between the new expanding industries and the old declining industries during the 1920s. The irreversible nature of consequential fixed investment, which cannot be corrected save in the long term, is likely to have been an important contributory factor to the industrial imbalance existing in the United Kingdom during the inter-war period.

The fact that the maintenance of secret reserves is not synonymous with conservatism in financial matters was not widely appreciated. An understatement of profit cannot continue indefinitely without compensating overstatement, and although accounting information prepared on an 'accruals basis' is not the same direct reflection of 'hard facts' as was the case when reports were based entirely on the movement of cash into and out of the firm, or through the hands of the steward, nevertheless the reality of the situation could not be concealed indefinitely. Both the general public and accountants were reminded of the functional nature of accounting reports by the financial collapse of the RMSP Co. The demerits of secret reserves were exposed as the result of the failure of the accounts of this company to provide any indication of impending financial disaster. The fact that the accounts were audited by a firm of accountants with an international reputation as leaders in their profession, and apparently prepared in accordance with normal accounting practice, merely served to emphasise the enormity of the

⁵¹Quoted in 'Auditors and Shareholders', *Accountant*, Vol. LXXX, 1929, p. 750.

⁵²'R.M.S. Accounts', *Accountant*, Vol. LXXX, 1929, p. 750.

⁵³H. B. Samuel, *Shareholders' Money*, Pitman, 1933, p. 269.

lesson which had to be learned. The court proceedings against Lord Kysant, chairman of the Company, and Mr. H. J. Morland, the Company's auditor, are discussed at length elsewhere.⁵⁴ A useful insight to the permissive nature of company law in connection with matters of finance and disclosure, the scope which this provided for the dilution of accounting disclosure practices, and the likely consequential effect on resource allocation, may be obtained by considering some of the events leading up to the financial collapse of the RMSP group of companies.⁵⁵

Lord Kysant, then Owen Crosby Phillips, had been appointed managing director of the then ailing shipping company in 1903. He was an expansionist and achieved considerable success in this respect, but his policies resulted in a high ratio of loan capital to equity within the long term capital structure of the group. The extent of the gearing was obscured by an intricate scheme of cross-shareholdings between the various associated companies. This financial imbalance was put to the test in the immediate post-war years when Phillips made two tactical errors. He placed orders to replace ships lost during the war, but unfortunately most shipping companies were doing the same and prices spiralled up to four times that asked for similar ships built a couple of years later. In addition, he purchased a large proportion of the merchant ships owned by the British Government, ostensibly to eliminate potential competition. These events were followed by an almost immediate downturn in shipping transportation activity and Phillips was left with an enormous and considerably over-valued fleet which at prevailing rates of freight could not pay its way. On a personal level events were more encouraging; in 1923 he was created Lord Kysant 1st Baron of Carmarthen.

The prudent solution to his predicament would have been a reconstruction and reduction of capital. Kysant appears to have come to the conclusion, however, that his heavy reliance on debt capital would have placed restrictions on his freedom of action and prejudiced future development and expansion of the group. In the event he chose to wait for the upturn in trading conditions which would rectify the financial imbalance. Meanwhile, however, public confidence had to be retained and this resulted in Kysant extending his financial ingenuity to the development of dangerous and mis-

leading reporting practices. The apparent profitability of the group was exaggerated by various companies within the group paying dividends to one another, and by the payment of dividends to external investors out of excess tax provisions and non-recurring items of revenue. Accordingly, the reporting standards of the company were compromised as Kysant sank deeper into deception of the investing public. The Royal Mail had published information concerning profitability in the early years of the century despite the absence of any company law requirement, but in common with those of other hard pressed firms, the accounts gradually revealed less and less.

Kysant may be described as something of an 'operator', certainly in regard to financial matters. He regarded accountancy as a means of deception rather than communication. It appears that he was successful in pursuing this objective; as late as 1928 the RMSP Co. was still being recommended by 'Fairplay' as a sound investment. The fact that the company's acute financial embarrassment did not remain a secret, and consequently provide some kind of commercial vindication of Kysant's policies, was because the company failed to turn its trading corner before the secret reservoir of resources, built up in the halcyon days, from the point of view of the shipping industry, of the First World War, had entirely drained away.

The significance of the Royal Mail case

Notwithstanding the acquittal of both the company's chairman and auditor on the charges brought against them in connection with the information contained in the 1926 and 1927 balance sheets, Mr. Justice Wright's charge to the jury,⁵⁶ at the Old Bailey on 30 July 1931, incorporated express criticism of the reporting practices of the Royal Mail Company and an implied criticism of the external audit function. These views indicated that the accounting profession might be well advised to devote more effort towards the development and application of higher standards for auditing and reporting financial information. The improvement in reporting standards which had been brought about by the 1928 Companies Act had not extended to the profit and loss account. The undisclosed creation and utilisation of reserves persisted, and best practice appears to have required no more than a reference to the fact that a transfer was being made, and then only when the transfer was from the balance sheet to

⁵⁴*The Royal Mail Case*; Sir Patrick Hastings, 'The Case of the Royal Mail', in *Studies in Accounting Theory*, p. 452.

⁵⁵This section draws on the factual content of an article by P. N. Davies and A. M. Bourn 'Lord Kysant and the Royal Mail', *Business History*, July 1972, p. 103.

⁵⁶*The Royal Mail Case*, p. 222.

the profit and loss account. Prior to RMSP the auditor continued to regard his responsibility as being confined to the balance sheet,⁵⁷ despite the fact that the inclusion of the balance of profit therein ought perhaps to have directed his attention to the form and content of the profit and loss account. The ICAEW took counsel's opinion on the significance of the 1929 consolidating Act but no reference is made in the opinion given to the responsibility of the auditor for the content of the profit and loss account. Views expressed during the course of the Royal Mail case, and the general reaction to it, however, caused the profession to re-assess the situation. The disagreement which emerged in the effort to devise a solution is one of the arguments in favour of integration of the professional bodies.

The existence of complete disagreement between the two leading accounting bodies, as regards the proper response to the Royal Mail Case, became apparent at the annual dinner of the English-speaking accountants in Paris on 17 December, 1931. Mr. H. L. H. Hill, President of the ICAEW, expressed the view that:

There is always a lag, and legislation with which we are concerned is always framed upon the best accountancy practice. We must, therefore, take the lead so that, if and when fresh legislation is enacted, there may be by that time an established practice in accountancy in advance of the requirement of present-day legislation and established practice that will assist and direct those who frame the laws to institute further safeguards for investors and the public.⁵⁸

Mr. H. Morgan, president of the Society of Incorporated Accountants and Auditors, who spoke at the same dinner, took a different line,

... some of the questions involved [in the Royal Mail case] would have been avoided had the law required disclosure in the profit and loss account of the actual trading results year by year, and the amounts of revenue derived from various sources. Further, it is extremely probable that the disastrous losses suffered by stock and debenture holders would not have occurred or at any rate would have been minimised. I maintain that it is of great importance both to the investing public and to our own profession that efforts should be made to

remedy the inadequate provisions of the Companies Acts in regard to accounts with as little delay as possible.⁵⁹

These contrasting opinions which were, as it transpired, not unnaturally the official views of the respective institutions which Hill and Morgan represented, make different assumptions about where responsibility for improvement in accounting practices should lie. The Society took the view that it was unreasonable to expect the auditor to progress beyond the minimum requirements laid down by law; these were regarded as constituting an effective limit on his powers. The Society's view also assumed that it was possible to achieve improvement in these matters by detailed legislative prescription. The Institute, on the other hand, did not regard detailed legislative prescription as either a desirable or a feasible proposition. Their objective was an accounting profession which experiments with new methods and procedures, and as a result succeeds in achieving an improvement in profit measurement and financial reporting standards which the legislature might subsequently choose to give statutory support. Perhaps the main difference was that the Society regarded accounting procedures as being sufficiently developed to justify legislative approval and enforcement whilst the Institute did not. Accountants both inside and outside the UK lined up behind either the Society or the Institute.

The debate surrounding the most appropriate method of stimulating an improvement in reporting standards attracted the attention of *The Accountant*. This periodical played an important part in emphasising that the first lesson which must be learned from the Royal Mail involved a re-assessment of the implicit assumption in financial reporting,

... that secrecy is a necessary adjunct of commercial success.⁶⁰

The case of the 'obscurantist party' based on the hazards of disclosing information to competitors – given so much weight in the evidence before Greene – is summarily rejected, as is the paternalistic conception of accounting, in favour of the view that it is preferable to alarm one's shareholders by frank disclosure of the financial position than to keep them in a fool's paradise until it is too late for a remedy to be possible. In the years immediately following RMSP, *The Accountant* favoured the remedies proposed by the Society and its officials, to the exclusion of those put forward by and on behalf of the Institute.

⁵⁷During the course of the trial Mr. H. Morgan, President of the Society, expressed the opinion that it was no part of the auditor's duty to certify that the profit and loss account exhibited a true and correct view of the company's affairs: *The Royal Mail Case*, p. 190.

⁵⁸Reported in *Accountant*, Vol. LXXXVI, 1932, p. 44, at p. 45.

⁵⁹*Ibid*, at p. 46.

⁶⁰'Second thoughts on the Royal Mail Case', a leading article, *Accountant*, Vol. LXXXV, 1931, p. 313, at p. 314.

From the investor's standpoint the moral of the RMSP Co. case is the necessity for the amendment of the company law so as to make compulsory the issue to shareholders of fully detailed and unambiguous profit and loss accounts.⁶¹

The Society, in accordance with its stated position, did not attempt to solve the problem by issuing detailed instructions to their members concerning the content of published accounts. A Company Law Amendment Committee was appointed by the Society, whose recommendations for the reform of company law are set out in a report completed in April 1932. The main recommendations were that the profit and loss account should show the true balance of profit and loss for the period, that abnormal or extraneous debits or credits together with any transfers from reserves should be separately stated, and that free reserves should appear on the face of the balance sheet. These proposals were not significantly different from those issued by the Institute 11 years later.⁶² Although it is a poor reflection on the authority of that professional body, one is bound to conclude that the possibility of issuing these recommendations as desirable objectives must have been dismissed by the Society as being of no real value, in the absence of supporting legislation.

Further support for the line taken by the Society comes from practising accountants. The failure of the Institute to demand legislative reform was strongly criticised at the 51st annual general meeting of the Institute in 1932 where the presidential address, normally set aside for an assessment of purely domestic matters, was devoted almost entirely to an examination of the implications of RMSP.⁶³ A prominent critic of contemporary audit practice, Thomas Greenwood, wrote a number of articles, published in *The Accountant*, which attacked the current state of audit practice. He put himself squarely in favour of further legislative direction, and expressed the opinion that,

the ordinary investor does not realise the limitations which are placed upon an auditor by the failure of the Companies Act to lay down more explicitly the lines upon which the profit and loss account should be prepared ⁶⁴

The Institute's view, first expressed by Hill at the Paris meeting, was taken up again in his presidential address, where particular emphasis was given to the dominant role of earning capacity in assessing the viability of a commercial enterprise.⁶⁵ In another of a series of speeches devoted to these matters Mr. Hill took a wide view of the purpose and value of accounting information:

The time for shutting up the public, investors and trade into three watertight compartments has gone; these three classes of the community are inter-dependent, and without mutual confidence they will all suffer. Our duty as an Institute extends beyond the boundaries of our particular clients, and, in so far as it does not conflict with their interests, we should, I believe, urge the disclosure of such information in regard to their affairs as will restore in the public and investors such confidence in the commercial world as will secure their support and respect.⁶⁶

This sudden recognition, by the Institute, of the value of reported profit and disclosure contrasts sharply with their submission to the Greene Committee six years earlier.

The official explanation for the Institute's refusal to request further legislation was a belief that the desired objective would be more effectively achieved by an improvement in professional standards brought about by accountants. Mr. Hill gave a different explanation for the Institute's rejection of a legalistic solution when he said:

I am thankful to believe that the time will never come when legislation can be so definite and comprehensive that auditors will be reduced to mere automata, to obey audit programmes laid down by statute.⁶⁷

The decision of the Institute to do no more than emphasise the need for accountants to work for an improvement in reporting standards was met with alarm and disgust by its members. Many practitioners, although not favouring further legislation, would have welcomed a statement which set out their responsibilities and objectives when preparing accounting reports. The Institute was fully aware of the desire for guidance, in connection with the treatment of secret reserves, and appointed a special committee to examine the problem, and counsel's opinion was once again taken. The conclusion reached

⁶¹'Company Law and the Royal Mail Case', a leading article, *Accountant*, Vol. LXXXV, 1931, p. 249.

⁶²'Recommendations on Accounting Principles No. 6, 'Reserves and Provisions', issued 23 October 1943.

⁶³The presidential address together with the discussions which followed, are reported in *Accountant*, Vol. LXXXVI, 1932, p. 623.

⁶⁴Thomas Greenwood, 'Half Truths in Audited Accounts', *Accountant*, Vol. LXXXVI, 1932, p. 521.

⁶⁵Presidential address, loc. cit., p. 628.

⁶⁶Speaking at a meeting of the Manchester society of the ICAEW, reported in *Accountant*, Vol. LXXXV, 1931, p. 774.

⁶⁷Presidential address, loc. cit., p. 629.

by the Institute was that whereas a general pronouncement was thought to be of little value and could easily be circumvented or misapplied, a detailed pronouncement was impracticable in view of the diversity of business situations and different ways in which secret reserves arise.⁶⁸ The Institute was not to undertake full responsibility for professional standards until the Taxation and Financial Relations Committee, set up in 1942, started to produce its *Recommendations on Accounting Principles*.

The nature of the auditor's responsibility: legal or moral?

The differing proposals made by the two leading professional bodies follow directly from contrasting conceptions of the nature of the auditor's responsibility. The question is whether the accountant has a legal or a moral responsibility for the quality of the accounting information on which he reports. If the former, then the auditor would discharge his duty provided accounting reports complied with the legal minimum; if the latter, then it would be incumbent upon the auditor to ensure that published information fulfilled its anticipated service to society which, by the 1930s, according to the president of the ICAEW, was to convey useful information to shareholders.⁶⁹

Historically, the accounting profession in this country has paid particular attention to its legal responsibilities. The explanation for this is that there existed judicial precedent, from a very early time, which the auditor concluded might be ignored only at his peril. In the absence of a mature accounting profession it was difficult to impose obligations on management beyond the strict legal position and accounting practice was accordingly designed primarily to comply with legislative provisions and judicial pronouncement. As the accounting profession grew in influence and prestige this situation persisted despite the fact that it had probably become much more difficult for management to pressurise the auditor, save in connection with certain limited areas covered specifically by company law. A further factor which delayed progress was the absence of any coherent body of accounting theory. The academic side of accountancy was neglected, no doubt because accountants were fully occupied carrying out their professional duties. Such auditing texts as were in circulation were in a number of cases later editions of books first published in the 19th century, or early

in the 20th century, and sections dealing with the 'Duties and Responsibilities of the Auditor' were little more than a recital of the judicial pronouncements in a number of well known cases. These texts reflected, and perhaps conditioned, professional practice where the accountant became entirely preoccupied with his legal responsibilities which consequently determined the scope and extent of the audit.⁷⁰

As late as 1926, Sir William Plender, Bart, GBE (he became Baron Plender of Sunbridge in the County of Kent in 1931) read one of a number of papers on 'The Accountant's Certificate in Connection with the Accountant's Responsibility' at the International Congress held in Amsterdam, and he examined the matter from a practical and legal rather than conceptual viewpoint, despite the absence of any apparent requirement to restrict the survey to purely legal matters.⁷¹ The fact that a rather wider view was taken of the auditors' responsibility in other countries is evident from a second paper submitted by, perhaps significantly, an academic, Professor Th. Limperg Jr. of the University of Amsterdam:

I shall not discuss the juridical side of the problem. Therefore, when I speak in this paper about 'responsibility' of the accountant, and, in connection with it, examine the value of the accountant's certificate, I think of nothing but the responsibility from a technical and moral standpoint, apart from any civil or criminal liability, therefore also apart from any legal regulation or from any interpretation sanctioned by jurisprudence or made a rule of.⁷²

The inadvisability of basing accounting practice on an established legal position was emphasised by Professor Limperg:

What was permissible twenty-five years ago is at present condemned as not allowable; what at present is not yet generally demanded of the accountant will after some time perhaps be considered as an integral part of his duty. Thus the idea of the meaning of the certificate and of the responsibility of the accountant changes with the conception of his duty.⁷³

Further evidence in support of the view that accounting practices in Britain, hampered by legal

⁷⁰'The Future of the Accountancy Profession', (note 50 above). Also A. F. Topham, giving evidence before the Greene Committee, day seven, para. 1291.

⁷¹Published in *The International Accountants Congress, Amsterdam 1926*, Mussess of Amsterdam, 1926, p. 25.

⁷²*Ibid.*, p. 85.

⁷³*Ibid.*, p. 86.

⁶⁸*Ibid.*

⁶⁹*Ibid.*, p. 628.

pronouncement, had fallen behind practices elsewhere appeared in the editorial to the *Journal of Accountancy*, in January 1932:⁷⁴

The modern, progressive, honest accountant [in America] pays very little attention to the legal requirements, except to assure himself that all technicalities have been met, but proceeds to work in the way that will produce the true results. The moral obligation is far greater than the legal.

It is with some satisfaction that the editor is able to quote⁷⁵ Sir Arthur Lowes Dickinson in support of the contention that the US profession had progressed to higher standards than those obtaining in the UK.

The first indication of some recognition on the part of British accountants of the need for accounting responsibility to extend beyond the strict legal position comes from Sir William McLintock who was, incidentally, closely involved in an investigatory capacity⁷⁶ in the events which culminated in the prosecution of Lord Kylsant. Speaking at a meeting of the Birmingham Chartered Accountant Students' Society on 31 March 1931, Sir William expressed the opinion that, in spite of the 1929 Act, auditors were given very little discretion when unpleasant facts were being kept from shareholders,

... except by taking an extra-legal view of their duties.⁷⁷

In assessing the significance of the prosecution in RMSP this point was not lost on the leaders of the ICAEW. Hill emphasised the importance of the auditor fully recognising the existence of a duty to do whatever is in his power,

to bring about the adoption of a higher standard than that prescribed by law, a higher standard based upon a proper sense of ethical obligation and fiduciary responsibility.⁷⁸

Similar sentiments were expressed by Lord Plender in a series of speeches delivered during 1932.⁷⁹

Conclusion

The prosecution in RMSP encouraged part of the accountancy profession, at least, to strive for acceptable standards of professional practice irrespective of the strict legal position. Others in the profession, failing to recognise the full significance of the distinction between moral and legal responsibility, regarded legislative prescription as the easy solution to the dilemma in which the accountancy profession found itself. The fact that even the ICAEW had not yet completely rejected the idea of company law as the primary authority in connection with accounting matters is evidenced by its failure to circulate among its members any definite proposals in connection with secret reserves, when counsel's opinion was that the legal position remained unchanged by the decision in RMSP.

That the government did not respond to the proposals put forward by the Society for additional legislation perhaps reflects no more than an unwillingness to introduce further amendment to a branch of law which had only recently been the subject of a complete overhaul. It is also likely that the government was coming around to the view that matters of account could best be left to accountants and the now more mature professional accounting bodies. In retrospect the correct choice was made; legislation without proper thought and experiment would probably have done more harm than good. This view corresponded with that of the Institute and perhaps explains why the Committee appointed in 1943, to consider and report on amendments to the Companies Act 1929,⁸⁰ gave much weight to the solutions worked out by the ICAEW, through its Taxation and Financial Relations Committee, during the interim period. The change which had taken place in attitudes towards disclosure in published accounting reports is indicated by the fact that whereas the proposals of the Greene Committee were based on the idea that it would be wrong 'to impose restrictions which would seriously hamper the activities of honest men',⁸¹ the Cohen Report, reflecting the sentiments expressed in the memorandum presented by the ICAEW, favoured 'fullest practicable disclosure'.⁸² The Society meanwhile lost its enthusiasm for legislative reform and by 1944 its proposals were less far-reaching than those of the ICAEW.⁸³

⁷⁴p.5.

⁷⁵p.6.

⁷⁶He was appointed by the Trade Facilities Acts Advisory Committee to investigate the financial position of the RMSP Co. and submitted his report on 17 April 1930. He subsequently represented the Treasury on a Committee of Inquiry into matters of management, administration and finance, and on 16 June he was appointed as one of three Voting Trustees, with voting control of the company.

⁷⁷Reported in *Accountant*, Vol. LXXXIV, 1931, p. 473, at p. 475.

⁷⁸Presidential address, loc. cit., p. 628.

⁷⁹For example, his presidential address to the Chartered Accountants Students' Society on 25 April 1932, reported in *Accountant*, Vol. LXXXVI, 1932, p. 665, especially at p. 668.

⁸⁰Cmd. 6659.

⁸¹Cmd. 2657, para. 9.

⁸²Cmd. 6659, para. 5. The actual words used by the ICAEW were 'maximum practicable disclosure', appendix Z (1) to minutes of evidence for day 13, p. 388.

⁸³Compare the memoranda submitted by the ICAEW and the Society, which are appended to the minutes of evidence for days 13 and 17, respectively.

The 1930s saw accountants, with the informal encouragement of the Institute through pronouncements by its leaders, taking a firmer line as regards the form and content of published accounts, indicating that the nature of the decision in the RMSP case, in drawing attention to the wider duties of the accountant, evoked a more positive response from the profession than had earlier statute law.

Many of the companies which introduced improvements into their reporting procedures during the 1930s did so, it appears, in response to the findings of the court in RMSP.⁸⁴ This was not, however, the sequence of events at the Dunlop Rubber Company Ltd.⁸⁵ where F. R. M. de Paula was Controller of

Finance. This company embarked upon a revision of the form and presentation of company reports in the 1929 accounts, published in 1930. The source of inspiration for the various innovations which were made by this company in the 1930s has been identified as the new ideas in the presentation of accounting reports appearing in American accounting literature, and with which the company's chief accountant, F. R. M. de Paula, was familiar.⁸⁶ Certainly the accounts of the Dunlop Rubber Co. 'blazed a new trail' for other companies to follow,⁸⁷ and the message of which was reinforced by the case of the Royal Mail.

⁸⁴*Shareholders' Money*, p. 245. Mr. H. Morgan, speaking at the annual dinner of the English speaking accountants in Paris, op. cit., p. 46. Thomas Greenwood, 'Shareholders and Auditors', *Accountant*, Vol. LXXXIX, 1933, p. 195.

⁸⁵Nor at Wiggins Teape & Co. (1919) Ltd.; see the consolidated balance sheet and profit and loss account for 1931.

⁸⁶S. A. Zeff, 'Profile of F. R. M. de Paula', *Accounting Historian*, Vol. 1, No. 4., p. 6.

⁸⁷Preface to the 12th edition of F. R. M. de Paula's *The Principles of Auditing*, by C. de Paula, Pitman, 1957, p. vi.

The Private Shareholder: his Sources of Financial Information and his Understanding of Reporting Practices

T. A. Lee and D. P. Tweedie

In order to function effectively, the reporting accountant must communicate with private shareholders in such a way that they both read and understand the messages he transmits. Failure to communicate adequately may well result in an individual shareholder either relying totally on professional advisers or becoming a passive investor who pays little attention to his investment. Alternatively, he may use other available sources of information in his decision making activities.

We are researching private shareholder use and understanding of available financial information in a project funded by The Institute of Chartered Accountants in England and Wales. This paper reports the results of a preliminary study of private shareholders in a medium-sized public company, and examines whether or not the reporting accountant is achieving his objective of adequate communication with the individual shareholder. In particular, it considers whether or not the responding private shareholders read thoroughly corporate annual financial reports, and whether or not those who show little interest in annual reports use other sources of financial information as surrogates. In addition, the respondents' general understanding of the nature of accounting and reporting practices is examined.

In particular, the following hypotheses have been tested with reference to data received from respondents:

- (1) Those respondents who read thoroughly annual reports also read thoroughly other sources of financial information relating to companies.
- (2) Those respondents who do not read annual reports at all, or who read them only briefly, read thoroughly other sources of information.
- (3) Those respondents who read thoroughly annual reports believe that they understand their nature

and content, and find them relevant to their investment decisions.

(4) Those respondents who do not read annual reports at all, or who read them only briefly, either believe that they understand them but do not find them relevant to their investment decisions, or do not believe that they understand them sufficiently to be of use in their investment decisions.

(5) Those respondents who read thoroughly annual reports do have a general understanding of accounting and reporting practices.

(6) Those respondents who do not read annual reports at all, or who read them only briefly, do not have a general understanding of accounting and reporting practices.

The survey respondents

The subjects of this pilot study were the private shareholders of a medium-sized UK public company. A mailed questionnaire was used, and 374 individuals replied, giving a 23.5 per cent response rate. This is a relatively low response rate which could indicate bias due to the lack of response. However, we would stress that this response was gained from a total sampling of the shareholders (that is, all identifiable individuals were mailed). In addition, the general nature of the questions asked, coupled with the lack of generalisation in our conclusions, make us believe that the results analysed below are sufficient to warrant analysis and comment.

The respondents were predominantly male, over 50 years of age, and with little or no experience in or knowledge of accounting. The experience and occupation categories are used in a later section in order to assess the background of the more knowledgeable and active users of annual reports.

TABLE 1
Analysis of respondents

	<i>Per cent</i>		<i>Per cent</i>
Male	80.5	Aged 50 or under	29.2
Female	16.8	Aged 51 to 64	36.8
Sex not disclosed	2.7	Aged 65 or over	31.6
		Age not disclosed	2.4
	100.0		100.0
With significant accounting or financial managerial experience or knowledge*	25.7	Retired from employment†	28.3
With little accounting or financial managerial experience or knowledge**	21.1	In accountancy, investment or financial managerial employment	21.7
With no accounting or financial managerial experience or knowledge	50.3	Other occupations	44.9
Accounting or financial managerial experience or knowledge not disclosed	2.9	Occupation not disclosed	5.1
	100.0		100.0

* That is, those respondents who indicated they were qualified accountants and/or employed in financial management.

** Those respondents who indicated their knowledge or experience of accounting was limited to educational courses in accounting or book-keeping experience.

† Those respondents who indicated they were retired but failed to indicate their former employment.

Shareholder use of the annual report

In order to test the hypotheses, it was necessary to determine the degree of attention paid by the respondents to the annual report and, thereby, to divide them into specific user groups, each with a clearly definable reading pattern.

The usual sections of a typical UK annual report include the chairman's report, the report of the board of directors, the income statement, the balance sheet, explanatory notes to the financial statements, the auditor's report, and various operational and statistical statements. The first-mentioned is normally qualitative in nature, and the second-mentioned usually contains a mixture of qualitative comment and summarised quantitative data. The remainder are predominantly accounting-based.

Respondents were asked to state whether or not they read the various parts of the annual report and, if so, whether thoroughly or only briefly. Analysis of the overall pattern of annual report use is contained in a previous article.¹ Two response extremes emerged – that is, respondents who read every-

thing thoroughly, and others who read nothing at all. However, by dividing the annual report content between predominantly quantitative and predominantly non-quantitative data, other response categories could be identified. Respondents who read thoroughly both the income statement *and* the balance sheet, but who do not read thoroughly all parts of the annual report, formed one such group. Those who read thoroughly only the mainly non-quantitative data (the chairman's report and/or the directors' report) formed another group. In addition, those who read briefly both the income statement *and* the balance sheet, but who did not fall into the latter non-quantitative category, formed a further grouping. This left a number of mixed responses which did not fall into any of the other defined groups. The overall percentage distribution of the 374 respondents' annual report reading pattern is given in Table 2. These annual report reader groups are used throughout the remainder of this section in order to identify the groups concerned.

Reading Patterns

Table 3 describes in detail the annual report reading patterns of the various groups, with the obvious exclusion of groups 1 and 6. The heading notation

¹Lee, T. A. and Tweedie, D. P., 'Accounting Information: An Investigation of Shareholder Usage', *Accounting and Business Research*, Autumn 1975, pp. 280-91.

used throughout is: CR, chairman's report; DR, directors' report; IS, income statement; BS, balance sheet; AR, auditor's report; NFS, notes to financial statements; SD, statistical data.

Respondents in reader group 2 tend to read thoroughly other sections of the annual report, in addition to the income statement and the balance sheet. For example, approximately one half of the group reads thoroughly the directors' report, the notes to the financial statements, and statistical data; and over two-thirds read the chairman's report thoroughly. In other words, this group could be classified as being reasonably thorough in its reading of most parts of the annual report.

Respondents in group 3 concentrate mainly on a thorough reading of the chairman's report. However, they do not ignore other sections of the annual report. Each of the other parts is read at least briefly by more than one half of the group, with the quantitative data in the financial statements being read briefly by 87% (in the case of the income statement) and by 77% (in the case of the balance sheet). Overall, however, the group tends to concentrate its attention on the less technical aspects of the annual report.

Group 4's readership pattern is difficult to identify. Thorough reading appears to be concentrated on the chairman's report (34%) and the income statement (44%), with brief readings being made of the chairman's report (64%) and the directors' report (47%). Many of the respondents obviously did not read several sections of the annual report.

Respondents in group 5 tend to read briefly other sections of the annual report, in addition to the income statement and the balance sheet, but not to read any part thoroughly. On the whole, the chairman's report and directors' report appear to be read briefly, as are the traditional accounting statements.

Based on this analysis, it was possible to test the

stated hypotheses by separating the six defined reader groups into two main categories – thorough readers and less interested readers. This was undertaken by averaging the intensity of reading of each stated reader group across the entire annual report, as shown in Table 4 (that is, by averaging the percentages in each line of Table 3).

Thus, the reader groups fall into two distinct categories. Group 1 reads everything thoroughly; and, on average, two-thirds of group 2 read thoroughly each section of the annual report. These two groups can therefore be classified as thorough readers of the annual report. Members of other groups usually read the annual report briefly, if at all, and thus were classified as less interested readers.

Shareholder use of other sources of information

Having classified the survey respondents into thorough and less interested readers of annual reports, the hypotheses stated were tested. This section deals with the first two: (1) those respondents who read thoroughly annual reports also read thoroughly other sources of financial information about companies; and (2) those respondents who do not read annual reports at all, or who read them only briefly, read thoroughly other sources of information. Table 5 analyses the reading of other sources by the thorough and less interested reader groups. The heading notation used throughout is: FPR, financial press reports; OMR, occasional merger or acquisition reports; HFR, half-yearly financial reports; SR, stockbrokers' reports; MEC, Moodies or Extel Cards; a, read thoroughly; b, read briefly; c, do not read.

All five information sources apparently are read more thoroughly by thorough readers of annual financial reports than by less interested readers.

TABLE 4
Index of intensity of reading of annual reports

READER GROUP	1	2	3	4	5	6
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
Read thoroughly	100	66	21	19	6	—
Read briefly	—	26	52	38	75	—
Do not read	—	8	27	43	19	100
	100	100	100	100	100	100

Using the chi square test, differences in reading patterns were found to be significant at the 1 per cent level for each information source, with the exception of stockbrokers' reports. It could be postulated that those respondents lacking interest in available information sources would naturally tend to rely on investment advisers, but many thorough readers of annual reports were also found to read stockbrokers' reports thoroughly.

The greatest reading difference between the two main groups in Table 5 (52 percentage points) concerns the thorough reading of half-yearly financial reports. The figures also suggest that less interested readers of annual reports tend to shy away from using formal accounting-based reports, relying instead on interpretative reports from sources such as the financial press and stockbrokers. For example, 40 per cent of the less interested group reported using financial press reports thoroughly; yet only 21 per cent use half-yearly financial statements, and a relatively insignificant 8 per cent use investment services such as Moodies.

In summary, the data in Table 5 would appear to be consistent with hypothesis 1, whilst disproving hypothesis 2. In other words, those respondents making thorough use of annual reports tend to make thorough use of other information sources, including those which are accounting-based; and those respondents who do not read thoroughly annual reports tend not to compensate for this by making thorough use of other information sources.

Shareholder understanding of reported information

This section tests the remaining hypotheses: (3) those respondents who read thoroughly annual reports believe that they understand their nature and content, and find them relevant to their investment decisions; (4) those respondents who do not read annual reports at all, or who read them only briefly, either believe that they understand them but do not find them relevant to their investment decisions, or do not believe that they understand

TABLE 5
Extent of use of other sources of information

SOURCE OF INFORMATION		Thorough readers of annual reports (n = 123)	Less interested readers of annual reports (n = 251)
		Per cent	Per cent
FPR	a	77	40
	b	22	47
	c	1	13
		100	100
OMR	a	59	31
	b	37	44
	c	4	25
		100	100
HFR	a	73	21
	b	23	51
	c	4	28
		100	100
SR	a	37	28
	b	35	32
	c	28	40
		100	100
MEC	a	28	8
	b	8	6
	c	64	86
		100	100

them sufficiently to be of use in their investment decisions; (5) those respondents who read thoroughly annual reports do have a general understanding of accounting and reporting practices; and (6) those respondents who do not read annual reports at all, or who read them only briefly, do not have a general understanding of accounting and reporting practices. Table 6 describes an initial analysis for this purpose.

The above data indicate clearly that thorough readers of the annual report believe they understand reported accounting information and find it relevant to their investment decisions – nearly three-quarters of this group responding to this effect. By way of contrast, approximately one-quarter of the less interested group hold the same view. Indeed, two-thirds of the latter group indicated that either they understand the information and find it irrelevant, or do not understand it. Applying the chi square test, the differences between the two groups are significant at the 1 per cent level and, consequently, it would appear that the data are consistent with hypotheses 3 and 4.

Interestingly, respondents who believe they understand reported accounting information, but find it irrelevant, gave no clear indication of other sources of financial information which they find relevant to their investment decisions. Table 7 reveals that, with each source of financial information other than the annual report, respondents who stated that the latter is irrelevant pay less attention to other information sources than those who stated they find the annual

report relevant. The notation in Table 7 is as defined for Table 5.

These data appear to be further evidence that interest in financial information is reasonably consistent – if the respondent is not interested in the annual report, it is unlikely that he will be more interested in other information sources than are respondents who are interested in the annual report. These results, with the exception of stockbrokers' reports, are significant at the 1 per cent level when the chi square test is applied.

While the above data would appear to be consistent with hypotheses 3 and 4, the possibility exists that those respondents who stated they understand reported accounting information, but found it irrelevant, may not have a general understanding of it. Similarly, those respondents who believe they understand the information, and find it relevant, may have a false impression of their comprehension of its nature. These respondents are at most risk since they could be using reported data when their general understanding is poor.

Further Tests of Understanding

To test the appropriateness of respondents' believed understanding, four questions were asked concerning their general knowledge of the nature of current reporting practice. These related to what is the usual basis for valuing plant and machinery in the balance sheet; who is legally responsible for the accounting information contained in the annual

TABLE 6

Understanding and relevance of reported information

	<i>Thorough readers of annual reports (n = 123)</i>	<i>Less interested readers of annual reports (n = 251)</i>
	<i>Per cent</i>	<i>Per cent</i>
Respondents stating they understood reported accounting information:		
–and found it relevant to their investment decisions	73	23
–and found it irrelevant to their investment decisions	16	34
Respondents stating they did not understand reported accounting information	8	33
Miscellaneous responses and lack of –responses	3	10
	100	100

TABLE 7

Understanding and relevance: use of other information sources

SOURCE OF INFORMATION		<i>Respondents who understand reported accounting information and find it relevant (n = 149)</i>	<i>Respondents who understand reported accounting information and find it irrelevant (n = 105)</i>	<i>Respondents who do not understand reported accounting information (n = 92)</i>
		<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
FPR	a	68	48	38
	b	29	47	45
	c	3	5	17
		100	100	100
OMR	a	50	35	29
	b	42	51	38
	c	8	14	33
		100	100	100
HFR	a	55	31	20
	b	37	50	44
	c	8	19	36
		100	100	100
SR	a	35	30	29
	b	40	28	29
	c	25	42	42
		100	100	100
MEC	a	26	10	4
	b	8	7	6
	c	66	83	90
		100	100	100

financial statements; what are the main aims of the annual financial statements; and whether annual accounting information gives an accurate, approximate or inaccurate reflection of a company's financial progress and position. It is appreciated that these questions can only give a limited insight into actual understanding, and that they are not absolutely indicative of an ability or inability to use reported information. However, failure to appreciate these general points does not augur well for an understanding of more sophisticated and complex matters.

The detailed questions and responses have been analysed in an earlier article.² In general, respondents revealed a marked lack of general knowledge of reporting practice. For example, only 50% realise that plant is normally valued at historic cost; 41.2%

know that in the UK the board of directors is collectively responsible at law for annual financial statements; 59.3% understand that stewardship is a major financial reporting objective; 49.7% wrongly believe that financial statements describe the current value of the company as a whole; and only 40.2% realise that measured accounting data are of an approximate nature.

Respondents' answers to these questions have been used to construct an approximate index of understanding by awarding one point for each correct answer. The overall index is shown in Table 8: the distribution is given as percentages of the 374 survey responses.

By aggregating the two highest scoring groups, the above data reveal a normal distribution. They also disclose the extent of the lack of knowledge of the respondents. Approximately one fifth has no understanding of the reporting practices surveyed; and a further 31 per cent could give only one correct

²Lee, T. A. and Tweedie, D. P., 'Accounting Information: An Investigation of Shareholder Understanding', *Accounting and Business Research*, Winter 1975, pp. 3-17.

TABLE 8
Index of shareholder understanding

Points Score	Level of Understanding	Distribution
		Per cent
0	None	19.5
1	Low	30.8
2	Some	29.9
3	Reasonable	16.6
4	High	3.2
		100.0

answer out of four. Therefore, at least within the limits of the questions set, approximately half of the respondents have an apparently poor comprehension of the general nature of reporting practice. Only one-fifth of the respondents could give at least three correct responses, thus giving some indication of the limited extent to which the reporting accountant's messages are being understood by these private shareholders.

Table 9 relates the index of understanding to the respondents' view of their level of comprehension of reporting practices: the points score is the same as for Table 8.

The above data show quite clearly that many of

the respondents who believe they understand reporting practices lack, in fact, a general understanding of the matters tested. Only one quarter were able to answer correctly more than two of the four tests of comprehension and, moreover, an overall 12 per cent of this group failed to show understanding in any of the tests. These results give indications of a number of apparently ill-informed shareholders within a group who believe they understand the implications of the accounting data presented to them. Using the chi square test, the differences in Table 9 are significant at the 1 per cent level.

The relationship between respondents' reading of the annual report and their general understanding of the nature of reporting practice is examined in hypotheses 5 and 6. Table 10 analyses the differences in comprehension of the two main annual report groups: the points score is as for Tables 8 and 9.

On the basis of this data, respondents who read the annual report thoroughly tend to be the most knowledgeable readers – 60% of this group answered correctly at least half of the understanding tests, compared with 44% of the less interested group. The overall responses of the two groups are reversed at the other extreme of the comprehension index. These differences are significant at the 1% level, applying the chi square test, and it can therefore be reasonably claimed that hypotheses 5 and 6 are not disproved – that is, that understanding of reporting practices and a thorough reading of annual reports are related. However, this finding is a relative one, given that neither reading group revealed a complete understanding or a complete lack of understanding of reporting practices.

TABLE 9
Actual and perceived understanding

INDEX OF UNDERSTANDING	<i>Understand and find relevant</i>	<i>Understand and find irrelevant</i>	<i>Do not understand</i>	<i>Miscellaneous responses</i>
	(<i>n</i> = 149)	(<i>n</i> = 105)	(<i>n</i> = 92)	(<i>n</i> = 28)
	Per cent	Per cent	Per cent	Per cent
0	9	16	33	43
1	35	28	30	21
2	32	30	28	25
3/4	24	26	9	11
	100	100	100	100

TABLE 10

Understanding and the annual report

INDEX OF UNDERSTANDING	Thorough readers of annual reports (n = 123)	Less interested readers of annual reports (n = 251)
	Per cent	Per cent
0	11	24
1	29	32
2	32	29
3/4	28	15
	100	100

Background of thorough readers of annual reports

The evidence of this survey suggests that those respondents who are thorough readers of annual reports have a greater understanding of reporting practices than have respondents who are less interested readers. This section of the paper considers whether the thorough readers have any particular type of background characteristic which distinguishes them from the less interested readers. Table 11 presents data for this purpose. Several respondents failed to give details of their background, and have been omitted from the analysis.

Table 11 reveals that the respondent who is a thorough reader of annual reports is more likely to have significant accounting or financial managerial experience than is the less interested reader – 43% of respondents as against 18%. 82% of the less interested group has little or no such experience, as compared with 57% of the thorough reading group. A similar comparison can be made for respondents' occupations – those in accounting-oriented occupations are more likely to be thorough readers than are less interested readers (32% as against 18%). Using the chi square test, these differences are significant at the 1% level.

Background data and understanding

Table 12 gives a similar analysis to the previous one – in this case examining the background characteristics of respondents grouped according to their answers to the tests of understanding. The index of understanding is as for Tables 8, 9 and 10.

The above data largely confirm the not unreason-

able assumption that those respondents whose occupations concern accounting in some form or another, or who have some experience in accounting matters, have a better (though not unduly high) level of understanding of the general nature of reporting practice surveyed in this study than have other respondents. Approximately two-thirds of those with such occupations or experience answered correctly at least one half of the comprehension tests, compared with less than one half of those lacking such a background. These differences are significant at the 1 per cent level when the chi square test is applied.

Summary and conclusions

This study tested six hypotheses, of which five are consistent with the data, the other having been disproved. However, it should be remembered that the analyses have been made entirely in relation to the responses given, and these depend ultimately on the willingness of shareholders to co-operate in such a study. Those who responded may be a different type of information user compared with those who failed to respond. Nevertheless, it must be pointed out that the shareholders responding to the questionnaire may well be the most interested and most informed section of the company's shareholder group and, consequently, the use and understanding of financial information for the group as a whole may be somewhat less than the results reveal. In addition, as this was a public quoted company, we have no evidence to suggest that its private shareholders are substantially different from shareholders in other companies. For these reasons we believe the results

TABLE 11
Background characteristics of thorough readers

	<i>Thorough readers annual reports (n = 123)</i>	<i>Less interested readers of annual reports (n = 240)</i>
	<i>Per cent</i>	<i>Per cent</i>
ACCOUNTING EXPERIENCE		
Significant	43	18
Little	25	20
None	32	62
	100	100
OCCUPATION		
Retired	38	26
Accountancy, investment, finance	32	18
Other	30	56
	100	100

TABLE 12
Background data and understanding

INDEX OF UNDERSTANDING	ACCOUNTING EXPERIENCE			OCCUPATION		
	<i>Significant (n = 96)</i>	<i>Little (n = 79)</i>	<i>None (n = 188)</i>	<i>Retired (n = 106)</i>	<i>Accountancy (n = 81)</i>	<i>Other (n = 168)</i>
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
0	8	10	28	20	9	21
1	29	33	30	35	22	32
2	35	32	28	31	33	30
3/4	28	25	14	14	36	17
	100	100	100	100	100	100

warrant the following preliminary conclusions:

- (1) *Hypotheses 1 and 2*: Interest in financial information appears to be consistent. Respondents who read thoroughly the annual report examine other sources of information more thoroughly than do less interested readers of annual reports. The latter therefore do not appear to compensate for their lack of attention to annual reports. This was confirmed by a later finding – that those respondents who find annual reports understandable and relevant, tend to read other sources of information more thoroughly than those who find annual reports understandable but irrelevant.
- (2) *Hypotheses 3 and 4*: Those respondents who read annual reports thoroughly are more likely to believe they understand reporting practices, and more likely to find these reports relevant to their investment decisions, than those who are less interested in reports.
- (3) *Hypotheses 5 and 6*: Those respondents who are thorough readers of annual reports tend to have a greater understanding of the general nature of reporting practice than less interested readers.
- (4) Those respondents who are thorough readers of annual reports appear to have a reasonably accurate belief in their relative ability to understand the general nature of reporting practice, although their actual comprehension is not at a high level.
- (5) Those respondents who have received some form of accountancy training, or whose occupation involves financial matters, are more likely both to read thoroughly the annual report and to understand reporting practices than are other respondents.

These results contain several implications for the reporting accountant and for those responsible for presenting financial information to the public – particularly if they have a more general application, which in our view is likely. Given the evidence that thorough readers of annual reports are also likely to be thorough readers of other sources of financial information, it is interesting to find that training or experience with accounting is apparently related to

the use and understanding of such reports. In fact, there is an indication from the evidence of this study that such background experience and/or training may be *necessary* before shareholders become thorough readers of annual reports and similar published data. It is possible, therefore, that lack of accounting experience may create an unwillingness to tackle the complexities of financial statements. Thus, if the provider of financial information wishes to communicate effectively to *all* private shareholders, it may be necessary to present less complex data to encourage those with no accounting background to read financial reports more thoroughly.

A further point of concern is the apparent lack of a general understanding of the nature of reporting practice by all types of report readers, including those with a relevant accounting background. Clearly, so far as these respondents are concerned, the reporting accountant has not made clear the aims and practices inherent in financial statements. Consequently, (and again assuming the results may have a general significance) there would appear to be a considerable need to educate the potential report user in this respect if the reporting accountant is to communicate successfully to all shareholders. This could well take the form of simple statements describing the objectives and methods inherent in financial statements.

The present system of reporting appears from this evidence to demand a technical know-how on the part of its users. Given that most shareholders are not equipped with these seemingly necessary skills, the reporting accountant must assume some responsibility for ensuring his messages are adequately received and understood by the ultimate recipients.

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Book Reviews

Contemporary Auditing Problems. *H. Stettler*, ed., University of Kansas, 1974. 121 pp. \$5.00.

This book comprises the proceedings of the 1974 Arthur Andersen and Co. – University of Kansas symposium on current problems in auditing corporate financial reports. It is some time since I taught and researched in depth in this area but, perhaps not surprisingly, the problems have not changed much over the years. Nor has the probability increased of resolving them.

The areas covered in the proceedings are auditor independence, the recent setting up of an Audit Commission by the AICPA, controlling audit quality, responsibility for fraud detection, and problems in sampling procedures in auditing. One paper was devoted to each of these areas, with the exception of the last (for which there were three papers). There was also a concluding paper on the future of the independent audit function.

All papers were competently prepared and adequately discussed but, after reading them, I did not feel that my awareness of these problems had been sharpened, or that any radical solutions to them were in sight. I may be accused of being unkind, but this type of exercise appears pointless unless it is likely to stimulate sufficient debate and action to improve the function under consideration. I did not feel that the AICPA Audit Commission, the Financial Accounting Standards Board, or the Securities Exchange Commission were going to take much notice of what is contained in this book.

I also felt that the authors of the papers were indulging themselves just a little too much, and the following are some examples. Berryman produced an initially useful historical review of the auditor independence concept which eventually developed into a waffly philosophical meander through the problem, ending with a rather tame hint at the need for an audit court (shades of Spacek and Stamp!). Harlan examined the AICPA Audit Commission in what I found to be a most pretentious and unreadable style, stating that it was not likely to examine the real issues of auditing. He stated what he believed these to be but gave no answers to them. Boni discussed the so-called sample of one, attacked the

mechanistic approach of traditional sampling, and advocated an approach which discovered and evaluated an error rather than simply observing that it existed. This would have been fine, if the paper had been written in such a way that the uninitiated reader could have discovered what the sample of one is. I have read it twice, and I am still none the wiser.

I do not wish to give the impression that all the papers were faulty. Catlett on fraud detection, Felix on decision theory applications to auditing, and Broderick on setting standards for statistical sampling are well worth reading. However, overall, I cannot work up much enthusiasm for it. I have much respect for Howard Stettler, the editor, who has done so much for auditing, particularly at the educational level. On this occasion, I believe he has been let down by some (but not all) of his contributors. Auditing is an intensely practical subject, practised by intensely practical men, who want intensely practical solutions to their intensely practical problems. They do not need the quasi-philosopher who discusses problems without giving answers.

T. A. Lee

Management of Company Finance, 2nd edition. *J. M. Samuels and F. M. Wilkes*. Thomas Nelson & Sons Limited, 1975. 608 pp. Boards £9.50, Paper £4.95.

This is not a completely new book, but a second edition of a book first issued in 1971. The first edition was an extremely welcome addition to the textbooks which then existed as it was the only really comprehensive textbook written by UK authors and based upon a UK institutional and tax framework. It was the only UK course text really suitable for introductory and intermediate finance courses taken by university and polytechnic students. Indeed, although this reviewer is aware of at least one other comprehensive UK text in the course of preparation, at the time of writing the book by Samuels and Wilkes is still the only suitable UK course text for degree level work. The reviewer has never recommended this book as his main text because the first edition included no end-of-chapter

questions and seemed to lack something in style compared to the competing American books. However, the book was always referred to as essential reading for the UK background and most students find it readable and very useful. In fact some preferred to work from it.

The first paragraph has been written to indicate that the book is a highly desirable purchase and it is very reasonably priced at £4.95 (for the paperback). However, it is presumed that a reviewer of a second edition should concentrate upon the changes from the first edition and here the book is disappointing. As a first check on new material, one can compare the end of chapter references. New developments have been taking place at such a fast rate since 1971 that one would expect a considerably enlarged or amended list after most chapters. However, there are less than thirty new references for the eighteen chapters combined; twelve of these relate to only two chapters, and twenty to only four chapters. On inspection of the text itself one is again disappointed; many of the chapters are exactly the same as those produced in the first edition.

There are some new features in this second edition but they are small compared to the total size of the text. The taxation treatment has been updated throughout the text to allow for the imputation system of corporation tax, there is a small addition to the section on leasing (although the literature has now moved on beyond the additional material supplied) and a much needed extension on international money and capital markets. There is also now a good list of problems at the end of each chapter. However, despite these welcome changes, the text has fallen behind the American texts with which it must compete for consideration as a course text. It would appear that the text has been produced as a 'stop-gap' – possibly under pressure from publishers to make the least number of print alterations in order to produce the book quickly and cheaply. If this is so, it is hoped that the third edition will be forthcoming very soon and will include more theoretical advances of the late 1960s and 1970s. Make no mistake – the text by Samuels and Wilkes is a very good book – it is sad that it has been allowed to become rather 'dated'. If these well-known authors would up-date the theoretical material and retain, and perhaps extend, their end-of-chapter problems, the third edition would probably sell in even greater numbers than the first edition. I am doubtful about the second edition; pending the third edition I shall continue to rely mainly on an American text with selective reference to Samuels and Wilkes as additional reading.

Cyril Tomkins

Keeping Employees Informed: Current UK practice on disclosure. *Robin Smith.* British Institute of Management, Management Survey Report No. 31, London, 1975. 43 pp. £7.50.

The scene is set for this report by the author's claim that in the deteriorating UK economy since 1971 unions have enlarged their interest from wages and job regulation to information about the whole company. Accordingly, this report documents a survey on the subject of the communication of corporate information to employees. We are told that nearly 400 BIM member firms answered the postal questionnaire which dealt with the wage bargaining system and joint consultative machinery as possible vehicles for disclosure. The survey attempted to establish the kinds of information disclosed, the frequency of disclosure and the identity of the recipients (*e.g.*, trade unions, staff associations, works council, individuals).

Some of the major findings of this survey which will be of interest to accountants are as follows: Pressure for more information has thus far come from individual employees rather than unions. Information is provided regularly to all employees (various methods) by 56% of firms in the survey and 22% of firms surveyed issue special reports on company performance to employees (and that percentage is said to be growing). Over half the firms surveyed give middle managers more information than shareholders receive and a quarter give manual workers more information than shareholders. Training in information handling is provided by 35% of firms surveyed; confidentiality was not a major concern.

The results of the survey are provided in some considerable detail with 19 tables showing information such as regular provision of information to individual employees by size of company, methods and frequency of communication to individual members, comparison of information disclosure to employees and shareholders, and analysis of contents of 29 monthly company house journals over a period of six months. Report sections cover bargaining and consultation disclosure practices, communications systems, the impact of legislation and company disclosure policy. Appendices detail research method and sample details, information in house journals, current practice in America and Europe, briefing groups at the British Sugar Corporation and a reading list.

This report presents a well constructed and comprehensive survey of corporate reporting to employees. It clearly demonstrates the considerable amount of corporate activity in an area which the accounting profession has thus far ignored. The disclosure is also shown to be produced voluntarily by companies

rather than as a result of any organised union pressure. The reader may note the absence of any criticism, but, in the reviewer's opinion, the merits of this report far outweigh the few small faults which might be found. The report in brief can be read by busy accountants through a 'Summary for the busy executive' but the complete text provides a wealth of source material for students, researchers and practitioners alike.

The implication of the report for accountants is that company reporting to employees is well advanced in the UK and that if accountants are to maintain their role in the corporate information system, they had better give some thought to the way in which they can implement such programmes. This represents a whole new field in accounting practice where very little work has been done. Possibly that is the reason why the report deals with all classes of management and other employees but never mentions accountants. Once again it seems that company managements have taken the initiative and experimented in the area while the accounting profession has been left to drag along behind to eventually, one hopes, take up the idea.

For those accountants engaged in either practice or research who recognize this growing trend in reporting to employees, this report is a must.

Lee D. Parker

Education for the Professions. eds. *John D. Turner and James Rushton*. Manchester University Press, 1976. viii + 119 pp. £3.95.

This collection of essays grew out of a series of discussions at the University of Manchester primarily concerned with the education and training of teachers. As these discussions proceeded it became apparent that most of the major problems in that area were also matters of concern to other professions. 'It therefore seemed desirable,' say the editors, 'for those who were involved in educating future members of a number of our leading professions to share their thoughts about the solutions they had found to problems which were discovered to be largely common'.

The result is the eight papers brought together here covering the education of accountants, architects, the clergy, doctors, engineers, lawyers, social workers and teachers. The writers are all members of the academic staffs of the professional schools of the University of Manchester. The editors are respectively the director and deputy director of the Colleges of Education Division of the University's Faculty of Education.

The idea of the book was a good one. To get a

group of persons, each one well informed about the educational problems of his (her) own profession, to 'share their thoughts' about their common problems might well have shed new light on some of these problems. Unfortunately the editors have been content to let their eight contributors write eight separate papers, each concerned with a different profession. The contributors share their thoughts, in varying degrees, with their readers, but not, regrettably, with each other. Such attempt as there is to identify common problems and significant trends affecting professional education generally is made by the editors in a short preface of just over two pages. For the rest, if any integration of ideas running across the professions is to result from this book, it has to be done by the reader for himself.

What are these common problems? One of the most acute is and is going to be the relationship to be worked out between the institutions of higher education and the professional associations, as more and more of the responsibility for professional education, which in earlier times was shouldered by the professions themselves, comes to be assumed by the universities and polytechnics. Unless the professions are to abrogate all responsibility for the qualifications of their members, they must maintain some control over the content of the education those members get. This at once presents the universities with a challenge to their curricular autonomy. The polytechnics are less sensitive on the point, since they have grown up in the shadow of the professional bodies and the CNAA. The universities are another matter. In the accountancy profession, the accreditation of university programmes is already the subject of lively controversy in the US. It is becoming so in Britain also as the transfer of professional education to the public sector proceeds apace.

A systematic comparison of the eight professions covered in *Education for the Professions* to see how they are dealing with this problem – and others – would have relieved the reader of the necessity to make such comparisons for himself. Though the chapter on medical education is the shortest in the book – it runs to only six and a half pages – it throws an interesting light on the problem of accreditation. The medical profession is usually thought of as the one British profession which has virtually delegated the certification of its members to the universities, since a medical degree normally leads to registration. Yet the General Medical Council has kept a tight hold on medical qualifications, carrying out visitations to medical schools, issuing its 'Recommendations as to Medical Education' periodically, and always keeping in the background its ultimate sanction of withdrawing recognition from a particular medical

qualification, a blow which would render it valueless. Apparently, until 1957, the result was to impose a high degree of uniformity on the undergraduate curricula of medical schools, though since then, and even more since 1967, the grip of the GMC has been relaxed. Those who will be concerned with the relationship between the universities and the accountancy profession in Britain in the next decade or two would do well to study these developments carefully. There is also something to be learned from the experience of the Royal Institute of British Architects' Visiting Board which inspects each recognised school of architecture every five years.

Another major problem or collection of problems which these professions share is finding the best way to combine theoretical and practical instruction. All of them have seen, at different times and at different speeds, a progression from an educational system heavily dependent on apprenticeship to a system much more concerned to equip students to understand the theoretical foundations of their profession. At both extremes of this spectrum, something important is missing. The problem is to achieve the optimal combination of theory and practice. Most of the eight professions under discussion here have something of interest to contribute. As examples, one might cite the architects' arrangement whereby architecture students work as fully salaried trainees in offices selected and supervised by a school of architecture, and the 'practical exercises' conducted by the Inns of Court School of Law and the Law Society's School of Law for budding lawyers.

Another interesting idea, discussed in the chapter on the education of teachers, is 'micro-teaching,' though this may be no more than a new word for an old technique. 'In micro-teaching the skills needed in a particular teaching situation are broken down into small units, and each of the skills is then taught to small groups of pupils for a short time. . . . The

system is one of controlled practice in which the teaching environment is scaled down in terms of class size (four to seven pupils), lesson length (five to 20 minutes) and teaching complexity in that one identifiable skill is concentrated on at a time' (p. 109). This seems to be simply an application in a novel setting of the methods used, for example, to train drama students in mime, voice production, and make-up separately rather than in all three at once. Practice sets in accounting instruction – they might be called micro-practice – have certain similarities with micro-teaching. The analysis of accounting practice into a number of separate skills which can be worked on one at a time is worthy of the attention of training departments and training centres. This is the obverse of the case study approach, where the emphasis is on combining and synthesising skills rather than on studying them separately.

Accountants will obviously learn more from the chapters in this book dealing with other professions than they will from Bryan Carsberg's chapter on the education of the accountant, for they will be familiar with most of its contents. To devote just over one-quarter of his 19 pages to the history of accounting was probably not to make the best use of his space. For the rest, he gives a well-balanced view of the profession's educational problems. No one can accuse him of under-selling the role of the universities in moulding the profession's intellectual future. 'Research of fundamental significance is in progress and may lead to the development of a sound theoretical foundation for accounting practice for the first time. . . . A revolution in accounting comparable to the industrial revolution in technology, and indeed to the Copernican revolution in astronomy, has already begun.' These are stirring words. We must hope that the expectations that they raise will be rapidly realised.

David Solomons

Contributors to Accounting and Business Research

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F. L. Clarke, BEC, AASA(Snr), ACIS, is a Lecturer in Accounting at the University of Sydney, Australia. Prior to his present appointment he held the positions of Lecturer in accounting at the NSW Institute of Technology and teacher of accounting with the NSW Department of Technical Education. He is joint author (with R. L. Bowra) of *Holding Companies and Group Accounts* (1973) and has published articles in *Abacus*, *The Australian Accountant*, *The Chartered Accountant in Australia*, *The Accountants' Journal* (New Zealand), *The South African Chartered Accountant*, *The Accountant*, and *The Accountant's Magazine*.

J. R. Edwards, BSc(ECON), MSc(ECON), ACA, ATII, took up his present position as Lecturer in Accountancy at University College, Cardiff, when he left the London office of Coopers and Lybrand in 1971. His research interest is the development of profit measurement and reporting procedures and he is at present engaged in research, financed by the Board of Celtic Studies, into the 19th century accounting records of the Dowlais Iron Company. He has published a number of articles in professional journals.

K. P. Gee, BSc, PhD, is a Senior Lecturer in Accounting and Finance at the University of Lancaster. His undergraduate degree is in Economics and Accounting from the University of Bristol, while his PhD relates to an empirical study of management control information, carried out at the University of Manchester Institute of Science and Technology. Past winner of both the Sir Frederick Hooper and Reed Executive Essay awards, his publications include *Management Control and Information* (with Professor R. Beresford Dew) as well as articles in *Accounting and Business Research*, *Management Accounting*, *Management Education and Development* and *Management International Review*.

T. A. Lee is Professor of Accountancy and Finance at the University of Edinburgh. His current research work is mainly in the area of corporate financial reporting and he is author of *Company Auditing: Concepts and Practices*, *The Funds Statement*, *Income and Value Measurement*, and *Company Financial Reporting: Problems and Analysis*.

Ronald Ma, BCom (London), MBA (British Columbia) is Professor of Accountancy at the University of New South Wales and formerly taught at the Australian National University, the University of Singapore and the University of Malaya. He is a Fellow of the Association of Certified Accountants and of the Australian Society of Accountants. He was Joint Editor of the *Malayan Economic Review* from 1959-66, and is the co-author of *The National Income of Hong Kong 1947-1950* (Hong Kong University Press, 1955); *The Economy of Malaysia and Singapore* (Malaysia Publications, 1966); and *A Study of the Public Sector Accounts of Singapore* (Economic Research Centre, University of Singapore, 1970). His current research and teaching interests are in accounting theory and company finance. He has published over 30 papers in academic journals.

Malcolm C. Miller, MCom, ACA, ACIS, is Senior Lecturer in Accountancy at the University of New South Wales. He graduated in 1964 from that University with the University Medal, and obtained his professional experience in the Sydney office of Peat, Marwick, Mitchell & Co. as an audit senior and then Education Manager. He is a member of the New South Wales Accounting Standards Committee of the Institute of Chartered Accountants in Australia and is editor of 'Points from Published Accounts', which is a regular feature in *The Chartered Accountant in Australia*. His research and teaching interests are in accounting theory and financial accounting.

K. V. Peasnell, dip Bus studies, MSc, PhD, ACA, is a Lecturer in Accounting and Finance at the University of Lancaster. After qualifying as a chartered accountant in 1967, he studied at the Universities of Sheffield, London and Lancaster. Awarded a P. D. Leake Research Fellowship for the period 1970-72 and a Research Fellowship at the International Centre for Research in Accounting, in 1975 he obtained the degree of PhD for his thesis on the 'Usefulness of Accounting Information to Investors'. Publications include the ICRA Occasional Papers, *The Usefulness of Accounting Information to Investors*, *Accounting Objectives: A Critique of the Trueblood Report*, and *Current Cost Accounting: The Index Number Problem* (with L. C. L. Skerratt).

George J. Staubus, CAP, PhD, is Director of Research and Technical Activities Financial Accountancy Standards Board, on leave from the University of California, Berkeley where he is Professor of Business Administration. He has also taught at four other American universities and the London Graduate School of Business Studies. His articles have appeared in a dozen periodicals in four countries and his books include one on financial accounting, *A Theory of Accounting to Investors* (University of California Press, 1961); a 1971 Richard D. Irwin book on cost accounting theory, *Activity Costing and Input-Output Accounting*, and *Objectives and Concepts of Financial Statements* (with W. J. Kenley,) published by the Accountancy Research Foundation, Melbourne.

D. P. Tweedie, BCom, PhD, CA, is a Lecturer in Accounting at Edinburgh University. He qualified as a chartered accountant in 1972, having previously obtained a doctorate in industrial relations from Edinburgh University. His current research interests include communication difficulties in financial reporting and notions of fairness in wage determination.



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